



LIBRARY  
UNIVERSITY OF CALIFORNIA  
DAVIS











2 24  
5-57  
UNIVERSITY OF CALIFORNIA  
LIBRARY  
DAVIS  
COPY 2

STATE OF CALIFORNIA  
DEPARTMENT OF WATER RESOURCES  
DIVISION OF RESOURCES PLANNING

## Bulletin No. 65-57

# QUALITY OF SURFACE WATERS IN CALIFORNIA

1957

EDMUND G. BROWN  
*Governor*



HARVEY O. BANKS  
*Director of Water Resources*

December 1960



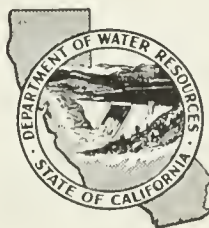
STATE OF CALIFORNIA  
DEPARTMENT OF WATER RESOURCES  
DIVISION OF RESOURCES PLANNING

Bulletin No. 65-57

QUALITY OF  
SURFACE WATERS  
IN CALIFORNIA

1957

EDMUND G. BROWN  
*Governor*



HARVEY O. BANKS  
*Director of Water Resources*

December 1960

LIBRARY  
UNIVERSITY OF CALIFORNIA  
DAVIS



# TABLE OF CONTENTS

	<u>Page</u>
LETTER OF TRANSMITTAL . . . . .	v
ACKNOWLEDGMENTS . . . . .	vii
ORGANIZATION, STATE DEPARTMENT OF WATER RESOURCES . . . . .	ix
ORGANIZATION, CALIFORNIA WATER COMMISSION . . . . .	x
INTRODUCTION . . . . .	1
SURFACE WATER QUALITY . . . . .	4
Summary . . . . .	4
North Coastal Region (No. 1) . . . . .	4
San Francisco Bay Region (No. 2) . . . . .	8
Central Coastal Region (No. 3) . . . . .	10
Los Angeles Region (No. 4) . . . . .	13
Central Valley Region (No. 5) . . . . .	19
Sacramento River Valley (5a) . . . . .	21
San Joaquin River Valley (5b) . . . . .	31
Sacramento-San Joaquin Delta (5c) . . . . .	38
Tulare Lake Basin (5d) . . . . .	40
Lahontan Region (No. 6) . . . . .	41
Colorado River Basin Region (No. 7) . . . . .	44
Santa Ana Region (No. 8) . . . . .	48
San Diego Region (No. 9) . . . . .	53

## TABLES

<u>Table number</u>		
1	Sacramento River Water Quality . . . . .	23
2	San Joaquin River Water Quality . . . . .	34
3	Tuolumne River Water Quality . . . . .	36

## PLATES

<u>Plate number</u>		<u>Page</u>
1	Stream Sampling Stations . . . . .	58

## APPENDIXES

A	Procedures and Criteria . . . . .	A-1
B	Basic Data . . . . .	B-1



ARVEY O. BANKS  
DIRECTOR

EDMUND G. BROWN  
GOVERNOR

ADDRESS REPLY TO  
P. O. BOX 388 SACRAMENTO 2  
1120 N STREET HICKORY 5-4711



STATE OF CALIFORNIA  
**Department of Water Resources**  
SACRAMENTO

December 30, 1960

Honorable Edmund G. Brown, Governor  
and Members of the Legislature of the  
State of California

Water Pollution Control Boards

Gentlemen:

I have the honor to transmit herewith a report on the quality of surface waters in California. This is the third in a series of reports concerning this important matter, and covers the period January through December 1957.

This statewide Water Quality Monitoring Program, authorized by Section 229 of the Water Code, was initiated in April 1951, at the request of the State Water Pollution Control Board and has been conducted by the Department of Water Resources in cooperation with the State Department of Public Health, Bureau of Sanitary Engineering; the State Department of Fish and Game; the United States Geological Survey; and with various other agencies and individuals. Its objective is to secure and interpret data on prevailing quality of water in the major streams and lakes in California, to evaluate trends in water quality conditions, and to ascertain causes for changes in water quality. These data are utilized by the Department of Water Resources in conducting water resources development studies and implementing water development programs; by the regional water pollution boards in establishing waste discharge requirements for the protection of surface waters in California; and by other water agencies throughout the State.

With few exceptions, the surface waters in Northern California during 1957 were found to be of excellent quality. Surface waters in Southern California during

Honorable Edmund G. Brown  
Governor, et al

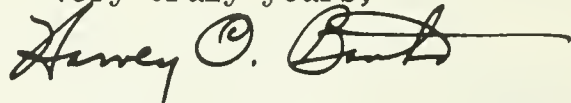
-2-

December 30, 1960

the same period, on the other hand, varied in quality from excellent to poor, with the poorer quality waters found in the lakes in that area. The lakes having the poorer quality water are those which receive relatively high volumes of drainage water and are at the same time subject to high evaporation rates.

The results of the 1957 survey of radioactivity in surface waters indicate few significant changes from that found in 1955-56. The radioactivity levels in the waters of the northern part of the State were found to be generally lower than in 1955-56, while those in Southern California generally show a slight increase. However, all values were found to be substantially below the accepted safe limits.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Harvey O. Banks", with a long horizontal flourish extending to the right.

HARVEY O. BANKS  
Director

## ACKNOWLEDGMENTS

The extensive coverage of the statewide surface water quality monitoring program is made possible through the cooperation of federal, state, and local agencies. The helpful cooperation of the following agencies in respect to this program is gratefully acknowledged:

### Federal Agencies

Department of the Army

Corps of Engineers

Department of the Interior

Bureau of Reclamation

Geological Survey

### State Agencies

California Disaster Office, Radiological Service

Department of Fish and Game

Department of Public Health

Bureau of Sanitary Engineering

Division of Laboratories

State Water Pollution Control Board

### Other Public Agencies

City of Long Beach, Department of Public Health

City of Los Angeles

Department of Water and Power

Department of Public Health

City of San Bernardino

City and County of San Francisco

Los Angeles County Flood Control District

Other Public Agencies (cont.)

Ventura County, Water Resources Division

The Metropolitan Water District of Southern California

Kern County Land Company

Kings River Water Association

The Department of Water Resources wishes to thank the following federal and state agencies who granted permission for inclusion in this report of unpublished water quality data collected under their various programs:

United States Department of the Interior

Geological Survey

Bureau of Reclamation

United States Department of Health, Education, and Welfare

Public Health Service

Central Valley Regional Water Pollution Control Board (No. 5)

The United States Geological Survey performed a substantial portion of the laboratory mineral analyses required by this program under a cooperative agreement with the Department of Water Resources. The bacteriological determinations were made by the California State Department of Public Health and the radiological determinations by the California Disaster Office, both under service contracts with the State Water Pollution Control Board.

## ORGANIZATION

### STATE DEPARTMENT OF WATER RESOURCES DIVISION OF RESOURCES PLANNING

HARVEY O. BANKS . . . . . Director of Water Resources  
RALPH M. BRODY . . . . . Deputy Director of Water Resources  
JAMES F. WRIGHT . . . . . Deputy Director of Water Resources  
WILLIAM L. BERRY . . . . . Chief Engineer,  
Division of Resources Planning  
IRVIN M. INGERSON . . . . . Chief, Engineering Services Branch

The activity under which this report was  
prepared is directed by

Meyer Kramsky . . . . . Principal Hydraulic Engineer

The activities in Northern California were  
under the supervision of

Willard R. Slater . . . . . Supervising Hydraulic Engineer

The activities in Southern California were  
under the direction of

John R. Teerink . . . . . District Engineer  
and the supervision of

David B. Willets . . . . . Supervising Hydraulic Engineer

This report was prepared by

Arthur J. Inerfield . . . . . Senior Civil Engineer  
Robert F. Clawson . . . . . Senior Hydraulic Engineer  
Felix W. Cartier . . . . . Civil Engineering Associate  
James M. Windsor . . . . . Assistant Civil Engineer

Assisted by

Robert B. Gunderson . . . . . Assistant Hydraulic Engineer  
Allen Joy . . . . . Junior Civil Engineer  
Lloyd P. Olsem, Jr. . . . . Engineering Aid I  
Shigeru Katsumata . . . . . Engineering Aid I

Paul L. Barnes . . . . . Chief, Division of Administration  
Porter A. Towner . . . . . Chief Counsel  
Isabel C. Nessler . . . . . Coordinator of Reports

ORGANIZATION

CALIFORNIA WATER COMMISSION

James K. Carr, Chairman, Sacramento

William H. Jennings, Vice Chairman, La Mesa

John W. Bryant, Riverside

John P. Bunker, Gustine

Ira J. Chrisman, Visalia

George C. Fleharty, Redding

John J. King, Petaluma

Kenneth Q. Volk, Los Angeles

Marion R. Walker, Ventura

George B. Gleason  
Chief Engineer

William M. Carah  
Executive Secretary



## INTRODUCTION

This bulletin, one of a series concerning surface water quality conditions in California, presents data collected routinely by all federal, state, and local agencies conducting surface water monitoring programs in California. In addition to presenting the basic data, this bulletin also presents an evaluation of significant quality variations detected at all sampling stations and, where possible, an explanation of the causes of these variations.

In order to make monitoring data available as soon as possible, the Department of Water Resources publishes and distributes to water pollution control, public health and other interested agencies and individuals, a monthly report containing the quality information collected by the department's surface water quality monitoring program and a preliminary evaluation of quality variations detected during the month.

Agricultural, industrial, and urban water uses in California contribute significant amounts of wastes to surface and ground water supplies. In some instances, the wastes are harmful, or potentially so, to the State's water resources. The early detection and control of quality degradation is imperative if the fullest practicable beneficial uses are to be made of the available water supplies.

In April 1951, a continuing stream sampling program was initiated at the request of the State Water Pollution Control Board, for surveillance of the quality of the State's surface water supplies. Since that time, this program has been conducted by the Department of Water Resources in cooperation with the State and Regional Water Pollution Control Boards and other agencies and individuals. A similar program was instituted in 1953 to monitor the quality of the State's ground waters.

The surface water quality program reported herein is authorized by Section 229 of the Water Code. This section directs that:

"The Department (of Water Resources), . . . shall investigate conditions of the quality of all waters within the State including saline waters, coastal and inland, as related to all sources of pollution of whatever nature and shall report thereon to the Legislature and to the appropriate regional water pollution control board annually, and may recommend any steps which might be taken to improve or protect the quality of such waters."

This is the third of a series of bulletins presenting water quality data collected on a statewide basis and covers the calendar year 1957. Data for previous periods are included in the following reports: California Department of Public Works, Division of Water Resources, Water Quality Investigations, Report No. 15, "Quality of Surface Waters in California, 1951-1954"; and California Department of Water Resources, Division of Resources Planning, Bulletin No. 65, "Quality of Surface Waters in California, 1955-1956".

While the data presented herein were, for the most part, collected under the department's surface water quality monitoring program, every effort has been made to include comparable data collected under various programs conducted by other agencies (see Acknowledgments).

The basic objectives of the surface water quality monitoring program are:

- (a) to secure continuous and reliable water quality data, on a monthly basis, from a network of stations which will provide representative data of the quality of water in the major surface streams and lakes of the State;
- (b) to evaluate and interpret chemical, physical, biological and radiological information collected during the course of this program to develop a comprehensive understanding of the factors which make up and alter the water quality at any station; and,



- (c) to detect changes in water quality and to notify the appropriate control agency, (regional water pollution control boards, state and local health departments, State Department of Fish and Game) when warranted.

The statewide water quality monitoring program in 1957 involved the collection and analyses of samples from 183 stations on 100 streams and lakes throughout California by various federal, state and local agencies (Plate 1). The program of the Department of Water Resources comprised the monthly collection and analysis of samples from 157 of these stations on 90 California streams and lakes.

The discussion of water quality is presented in this report by water pollution control regions, starting with Region 1 and progressing through Region 9. Within each region, the discussion is presented by drainage basin, the main stream of each basin being discussed first, followed by a discussion in downstream order of its tributaries. Each discussion will include only those constituents which were found to vary significantly.

Appendix A of the report contains a discussion of field and laboratory procedures and methods, and the criteria utilized in evaluating the quality of water. Appendix B contains monitoring station descriptions and locations, and the physical, chemical, bacteriological and radiological data for samples collected during 1957 at the 183 stations aforementioned. Also presented in Appendix B are graphs showing the monthly variation, for the past five years (1953-1957), of total dissolved solids for those stations in the Department of Water Resources' stream sampling program with a record of five years (1953-1957) or longer.

## SURFACE WATER QUALITY

### Summary

With few exceptions, the surface waters in Northern California during 1957 were found to be of excellent quality. Surface waters in Southern California during the same period, on the other hand, varied in quality from excellent to poor, with the poorer quality waters found in lakes which receive drainage waters and are subject to high rates of evaporation.

As indicated by Plates B-1 through B-67, the monthly variation in total dissolved solids is, in most cases, related to the seasonal flow and use variations of the watershed. Concentrations of most constituents tend to increase during the ~~summer~~ months when use is at a maximum and flow is at a minimum, reaching the extreme just prior to the start of the fall rains. In some cases, such as the Russian River near Hopland (Plate B-5), Mission Creek at Whittier Narrows (Plate B-16), and San Joaquin River at Friant (Plate B-47), the variations in flow and use have little or no apparent effect on the concentration of dissolved constituents.

The results of the 1957 survey of radioactivity in surface waters indicate few significant changes from that found in 1955-56. The radioactivity levels in the waters of the northern part of the State were found to be generally lower than in 1955-56 while those in Southern California generally showed a slight increase. However, the radioactivity levels were substantially lower than the recommended allowable limits.

### North Coastal Region (No. 1)

A total of fifteen stream sampling stations are located on streams in the North Coastal Region (Plate 1), as indicated in the following tabulation:

Smith River (1)  
Klamath River (3)  
Trinity River (2)  
Eel River (2)

Eel River, South Fork (1)  
Russian River (4)  
Russian River, East Fork (2)

Surface waters of this region were generally bicarbonate type with calcium and magnesium constituting the major cations. Mineral analyses of samples collected monthly during 1957 indicated only seasonal variation in concentration of constituents, and in most cases, only minor variations from values found in previous years. These waters ranged from soft to moderately hard with total dissolved solids (TDS) reaching 194 parts per million (ppm). All 15 of the stations in this region have a period of record of five years or longer. Graphs showing monthly variation in TDS for the past five years (1953-1957) for stations in this region are presented in Appendix B on Plates B-1 through B-8. High boron concentrations have been prevalent in the Russian River. The 1957 boron values, although high, were significantly lower than values found in previous years. Radioactivity levels were slightly below those for previous years with the exception of the Eel and Russian Rivers which were slightly higher.

The Smith River waters near Crescent City (Station 3a) continued to be of excellent quality, magnesium bicarbonate in character, class 1 for irrigation use, and met drinking water standards for mineral content. During 1957, the total dissolved solids content ranged between 44 and 90 ppm (Plate B-7). No significant changes in concentration of constituents in this water have been detected since sampling began in April 1951.

The Klamath River was sampled at three points: near Copco (Station 1), at Somesbar (Station 2) and near Klamath (Station 3). The Klamath River remained class 1 for irrigation use, and met drinking water standards for mineral content during 1957. It was a bicarbonate type water with no major cation. There was no marked change in concentration

of constituents between the headwaters and the mouth. The maximum total dissolved solids concentration, observed in 1957 (Plates B-2 and B-3), 162 ppm, occurred at Copco, the uppermost sampling station on the river. Only slight variations in hardness and boron have been noted since the beginning of the program in 1951. The 1957 hardness maximum, 80 ppm, was observed at the station near Klamath, and the highest boron concentration, 0.19 ppm, was measured at Somesbar.

Samples were collected from the Trinity River at Lewiston (Station 4a) and near Hoopa (Station 4). Only insignificant deviations in concentration of mineral constituents have been detected since sampling was initiated at these stations in April 1951, and no noticeable variation in the quality of the river between the two stations was detected in 1957. The water, with a total dissolved solids concentration of less than 150 ppm during 1957 (Plates B-7 and B-8), was of excellent quality and met drinking water standards for mineral content and class 1 standards for irrigation use.

The Eel River showed similar mineral concentrations near McCann (Station 5) and at Scotia (Station 6) during 1957. The water was calcium bicarbonate in character, slightly to moderately hard, class 1 for irrigation and met drinking water standards for mineral content. Total dissolved solids concentrations ranged between 66 and 180 ppm (Plate B-1). No large changes in total dissolved solids have been found since sampling began in April 1951. The radioactivity of the Eel River reached  $45.1 \pm 12.0$  micro-micro-curies per liter of dissolved beta near McCann (Station 5) in May 1957, a marked increase over the activity for the previous years. However, the significance of this increase, which was not in evidence in the May sample from the downstream station (Station 6) or in the September samples from both stations, cannot be evaluated until a longer period of record is available.



During 1957, the South Fork of the Eel River, which enters the main stem between Stations 5 and 6, was sampled near Miranda (Station 7). The South Fork, with a maximum total dissolved solids concentration of 150 ppm in 1957 (Plate B-2), showed no appreciable difference in quality or character from the water in the main stem. The water continued to be suitable for nearly all uses with only minor variations in quality being detected since sampling was initiated in April 1951.

Four monitoring stations are located on the Russian River: near Ukiah (Station 10b), near Hopland (Station 8a), near Healdsburg (Station 9), and at Guerneville (Station 10). Russian River water was of good to excellent quality, and suitable for most uses. During 1957, the maximum observed values for total dissolved solids varied between 150 ppm at Ukiah and 190 ppm at Guerneville (Plates B-4 and B-5). However, boron concentrations, which reached 0.94 ppm during 1957, periodically placed this water in the class 2 category for irrigation uses. The overflow from a well located between Hopland and Healdsburg previously had contributed considerable quantities of boron to the Russian River. This overflow was removed from the river in September 1956. With the termination of this discharge, the maximum boron concentration in the river fell from 4.3 ppm in 1955-1956 to the 0.94 ppm reported in 1957. The continuing presence of boron in the river indicates that other sources besides discharge from the well contribute boron to the river. These other sources are believed to be a characteristic of the geology of the watershed. The dissolved oxygen concentration decreased to 1.4 ppm in December 1957, at Station 10 while remaining normal at the other stations. The cause of this oxygen depletion could not be ascertained. Radioactivity in this water, while slightly higher in September 1957 than in May, was still well within the recommended safe limits.

The East Fork of the Russian River, which also contains imported Eel River water, was sampled at Potter Valley Powerhouse (Station 10a) and near Calpella (Station 8). Analyses of samples collected at these stations have shown only minor variations in quality since sampling began in 1951, and indicate little or no difference between the water of the East Fork and that of the main stem. While the hardness reached 105 ppm in January, it was less than 85 ppm the other eleven months of 1957. Boron concentrations in the East Fork water reached 0.73 ppm in 1957, placing this water in class 2 for irrigation use. The high boron concentration in the East Fork indicates that the boron problem in the Russian River probably originates at or near the headwaters of the river and its tributaries. As boron concentrations are also high in the Clear Lake area, located just across the drainage divide from the headwaters of the Russian River, it is probable that boron is an integral part of the geologic characteristics of this area.

#### San Francisco Bay Region (No. 2)

A total of five surface water monitoring stations are located on streams in the San Francisco Bay Region (Plate 1), as indicated in the following tabulation:

Napa River (1)	Coyote Creek (1)
Carquinez Straits (1)	Los Gatos Creek (1)
Alameda Creek (1)	

The waters of this region were bicarbonate in character with major base constituents consisting of calcium, magnesium, or sodium, depending upon the mineral composition of the rock formations of the individual drainage basin. No large changes in water quality have been detected in this region since sampling was started in December 1951. The waters were, with the exception of those in the tidewater reaches, good to excellent in quality and suitable for most beneficial uses during 1957.

Graphical presentations of the monthly variation in total dissolved solids for the four stations that have a period of record of five years (1953 through 1957) appear on Plates B-9 and B-10 in Appendix B. Although some of the largest waste discharges in Northern California are located in Region 2, most of them discharge directly to the San Francisco Bay below these sampling stations and their effects were not reflected in analyses at these points. The radioactivity in the waters of this region, while far below the recommended safe maximum, were slightly higher during 1957 than during previous years.

Samples of water were collected from the Napa River near St. Helena (Station 72). While these waters were suitable for most beneficial uses, the boron concentration, which ranged from 0.14 to 0.94 ppm during 1957, was often above the limit recommended for class 1 irrigation water. The concentrations of constituents found in 1957 do not represent a significant change from values found since December 1951.

Samples of water were collected from Carquinez Straits at Martinez (Station 28a) during 1957. The fluctuation in mineral quality of the water at this station is due mainly to the interrelationship between sea water and the quantity of fresh water outflow from the Sacramento-San Joaquin Delta. During 1957, conductivity ranged between 281 and 22,354 micromhos and total dissolved solids ranged between 196 and 15,624 ppm. The high concentrations occurred during a period of relatively low stream flows while the low values occurred during a period of high stream flow.

Boron concentrations in Alameda Creek near Niles (Station 73) ranged between 0.68 and 1.4 ppm, placing it in class 2 for irrigation. During 1957, this water was consistently in the very hard classification

with a range in total hardness from 276 to 474 ppm. Total dissolved solids reached 900 ppm in December (Plate B-9), the highest concentration recorded since sampling began in December 1951. Most constituents were found in slightly higher concentrations during 1957 than in previous years.

Only minor changes in the concentration of constituents have occurred since 1952, when sampling of Coyote Creek near Madrone (Station 82) was initiated. During 1957 the water was moderately hard (140-178 ppm hardness) and the total dissolved solids remained relatively constant between 185 and 235 ppm during 1957 (Plate B-9).

Los Gatos Creek was sampled near the headwaters at Los Gatos (Station 74). With the exception of 1956, there has been a gradual increase in the concentration of most constituents in this water since sampling began in December 1951. The generally lower mineral concentrations found in 1956 may be attributed to the high flows which occurred during December 1955, and January 1956. The 1957 range in hardness was 89-388 ppm and the range in total dissolved solids was 140-470 ppm (Plate B-10).

#### Central Coastal Region (No. 3)

During 1957, water samples were collected from eight monitoring stations located on the following Central Coastal Region streams (Plate 1), as indicated by the following tabulation:

San Lorenzo River (1)	Salinas River (1)
Soquel Creek (1)	Carmel River (1)
Uvas Creek (1)	Santa Ynez River (2)
Pajaro River (1)	

The waters of this region were bicarbonate type, with calcium and sodium as the major cations. High hardness and total dissolved solids were characteristic of the region. Graphical representations of the monthly variation in total dissolved solids for the period 1953 through 1957 for



stations located in this region, all of which have a period of record of five years or longer, are presented on Plates B-11 through B-14 in Appendix B. Little variation has been noted in the quality of the waters since the beginning of the program. Radioactivity showed no significant change from previous years.

The waters of San Lorenzo River at Big Trees (Station 75) were calcium bicarbonate in character, of excellent quality and suitable for nearly all beneficial uses during 1957. The water was moderately hard with concentrations of constituents well below the maximum values allowable for all but the most exciting industrial uses. Hardness reached 140 ppm and total dissolved solids 225 ppm (Plate B-12) in 1957, representing no significant change from values found since observations began at the station in December 1951.

The water of Soquel Creek at Soquel (Station 76) was usually of good quality and suitable for nearly all uses. It was calcium bicarbonate in character, moderately to very hard, with the maximum in 1957 reaching 310 ppm total hardness and total dissolved solids ranging between 230 and 525 ppm (Plate B-14). No significant variations in concentration of constituents have been noted since sampling began at this station in December 1951.

Uvas Creek was sampled near Morgan Hill (Station 96). The entire flow from this stream, except during flood stages, is diverted at Uvas Dam for the municipal supply of the City of Gilroy. Analyses of this water show little change in quality since sampling began in July 1952. It was calcium bicarbonate in character, class 1 for irrigation, and met drinking water standards for mineral content. Hardness was consistently high, with a maximum concentration of 198 ppm in 1957.

Pajaro River near Chittenden (Station 77) has limited use because of excessive concentrations of mineral constituents. During 1957, hardness reached 600 ppm, boron 1.6 ppm, chlorides 374 ppm, sulfates 263 ppm, and conductance 2,020 micromhos. These values do not represent a significant variation from other values observed since sampling began in December 1951. Concentrations of the above magnitude are sufficient to place this water in class 2 or 3 for irrigation uses and to make softening desirable prior to domestic use.

During 1957, water samples were collected from the Salinas River at Paso Robles (Station 43a). The water was calcium-magnesium bicarbonate and class 1 for irrigation during 1957, but total dissolved solids were above the desirable limit for drinking water, reaching approximately 600 ppm in June (Plate B-12). No appreciable changes in concentration of constituents have been noted in this water since sampling began in April 1951.

The quality of Carmel River near Carmel (Station 83) has shown no significant changes since sampling began in January 1952. The water was bicarbonate type with calcium and sodium as major cations and was class 1 for irrigation use. Hardness, which varied from 112 to 231 ppm, placed it in the moderately to very hard classification.

Santa Ynez River was sampled below Los Laureles Canyon (Station 45), and at Solvang (Station 45a). The quality of this water has not changed appreciably since sampling began in April 1951. Concentrations of total dissolved solids placed this water in the class 2 irrigation category (Plate B-13). Concentrations of 626 ppm hardness and 341 ppm sulfates, in addition to a high total dissolved solids value of 1,000 ppm at Station 45, made this water questionable for domestic uses and

undesirable for all but the least demanding industrial uses. The quality of water at the downstream Station 45a was only slightly better. At this point, the total dissolved solids, hardness, and sulfates reached maximum concentrations of 900 ppm, 592 ppm, and 262 ppm, respectively. Although water quality can generally be expected to vary with flow, analyses for the year 1957 showed little variation in concentration regardless of flow. This indicates that the quality of water from tributary streams was similar to that found in the Santa Ynez River.

#### Los Angeles Region (No. 4)

Water quality samples were collected from 17 stations in the Los Angeles Region during 1957 (Plate 1), as indicated in the following tabulation:

Ventura River (1)	Los Angeles River (2)
Matilija Creek (1)	San Gabriel River (3)
Santa Clara River (3)	Rio Hondo (1)
Piru Creek (1)	Mission Creek (1)
Sespe Creek (1)	Metropolitan Water
Santa Paula Creek (1)	District Aqueduct (1)
Mono-Owens Aqueduct (1)	

Surface waters in this region vary widely in quality and character, depending on location, amount of flow, and type of waste discharges entering the streams. The rainfall was much less than normal during the 1956-1957 season throughout most of Southern California. On many streams reduced runoff resulted in low flows and poor water quality. Monthly variations in total dissolved solids at the nine stations that have a period of record of five years (1953-1957) are presented graphically on Plates B-15 through B-19 of Appendix B.

Ventura River was sampled near Ventura (Station 61) and Matilija Creek, a tributary to Ventura River, was sampled two miles above Matilija Dam (Station 45b).

Station 61 on Ventura River is located just downstream from the confluence of Coyote Creek and Ventura River near Ventura. In 1957, construction started on Casitas Dam on Coyote Creek. In October 1957 the river was dry at Station 61 for the first time during the six-year period of sampling. The quality of the water at this station has shown very little change since its initiation into the program in April 1951. During 1957, it was very hard and ranged from class 1 to 2 irrigation water. Boron content ranged from 0.00 to 0.82 ppm during 1957, while electrical conductivity ranged from 597 to 1,613 micromhos. The mineral content of Ventura River water usually met drinking water standards, except, in some instances during low flow, when sulfate and total dissolved solids (Plate B-19) content exceeded the recommended limit. These waters were usually calcium sulfate-bicarbonate to calcium bicarbonate-sulfate in character.

Matilija Creek, two miles above Matilija Dam (Station 45b), has shown no appreciable change in quality since 1953. The water was usually calcium sulfate-bicarbonate in character with conductivity ranging between 943 and 1,428 micromhos, and hardness between 384 and 473 ppm. It was class 3 water for irrigation use and often contained sulfate concentrations which exceeded the desirable mineral content for drinking water. Boron continued to be a significant problem with concentrations ranging from 0.56 to 4.8 ppm in 1957. The boron content of water taken from Matilija Creek has been reported as high as 6.4 ppm prior to 1957.

The Santa Clara River system was sampled at the following six stations during 1957: Santa Clara River at the Los Angeles-Ventura County line (Station 46), Santa Clara River at Blue Cut (Station 46b), Santa Clara



River near Santa Paula (Station 46a), Piru Creek at Piru (Station 46c), Sespe Creek near Fillmore (Station 46d), and Santa Paula Creek near Santa Paula (Station 46e). Stations 46c, d, and e were added to the sampling program in June 1957, to monitor the important tributaries to the Santa Clara River. Data collected at Station 46, one mile upstream from Station 46b, indicated that this reach of the Santa Clara River can be adequately monitored at one station. Accordingly, Station 46b was dropped from the program at the end of 1957.

Santa Clara River water continued to be poor in quality, high in sulfate content, and extremely hard. Very little change in water quality has been noted since sampling began in 1951. Conductivity ranged from 1,493 to 2,058 micromhos near Santa Paula (Station 46a) and 1,862 to 3,509 micromhos at the Los Angeles-Ventura County line during 1957. This improvement in quality is attributed to the effect of better quality inflow from Piru and Sespe Creeks. The highest boron concentration of the three stations on Santa Clara River in 1957 was 1.56 ppm at the Los Angeles-Ventura County line (Station 46).

A sampling station on Piru Creek at Piru (Station 46c) was established in June 1957. Piru Creek is a major tributary to Santa Clara River and joins the river below this station. The surface waters at this station have sulfate as their predominant anion, but have no predominant cation. In 1957, the total dissolved solids content varied from 1,140 to 1,790 ppm. For irrigation use, water was class 2 at high flows and class 3 at low flows. Boron was high, ranging from 1.6 to 2.0 ppm. Hardness ranged from 518 to 924 ppm. The water did not meet drinking water standards for mineral content. Santa Felicia Dam, about five miles upstream from Piru, was completed in 1956 and storage of Piru Creek water was begun.

Sampling of Sespe Creek near Fillmore (Station 46d) was initiated in June 1957 to monitor this important tributary to the Santa Clara River. During 1957, Sespe Creek water varied from calcium-sodium sulfate-bicarbonate in character at low flows to calcium sulfate-bicarbonate at high flows. Boron ranged from 1.50 to 3.12 ppm and electrical conductivity ranged from 1,067 to 1,718 micromhos. This water was class 1, 2, or 3 for irrigation use, depending on the magnitude of the flow, with boron and electrical conductivity as the main limiting factors.

A monitoring station was established in June 1957 on Santa Paula Creek near Santa Paula (Station 46e), to determine the water quality of this important tributary of the Santa Clara River. The station is about four miles upstream from the confluence with Santa Clara River. During 1957, Santa Paula Creek water was calcium bicarbonate-sulfate in character at high flow but shifted to sodium-calcium sulfate-bicarbonate at low flow. Total hardness of these waters ranged from 319 to 481 ppm and conductivity between 842 and 1,418 micromhos. The water met mineral standards for drinking water except at extreme low flows when the sulfate content, which was 265 ppm in September, exceeded the recommended limit.

A water sample was collected each month from Mono-Owens Aqueduct at its terminus at Upper San Fernando Reservoir near San Fernando (Station 70) and analyzed by the Los Angeles Department of Water and Power. The water was excellent in quality, ranging from 163 to 227 ppm total dissolved solids in 1957 (Plate B-16). It was calcium-sodium bicarbonate in character and soft. The quality has not changed appreciably since the initiation of the sampling program in April 1951.

The Los Angeles River Channel, which was sampled in Los Angeles at Figueroa Street (Station 47), and in Long Beach (Station 48), continues

to serve the Los Angeles metropolitan area as a drainage channel for storm runoff and many industrial waste discharges. The flow at Station 47, consisting mainly of surface drainage and industrial waste discharges from San Fernando Valley, was continuous throughout 1957. During the year, the surface flow at Station 47 remained sodium chloride-sulfate in character and class 3 water for irrigation use, except during periods of rain runoff when the water quality improved. The water was very hard, ranging from 315 to 995 ppm total hardness.

Oil brine wastes, which are discharged into the river just upstream from Station 48, contribute to the high concentrations of salts in the river at this point. Arsenic concentrations of 2.5 and 2.0 ppm were found in the May and September 1957 heavy metals analyses. The arsenic content of 2.5 ppm is the highest value found since it was first detected at this station in October 1952. The general water quality of the river has not changed appreciably since sampling began in April 1951, except that during periods when the river flow is increased by storm runoff significant water quality improvement occurs.

The San Gabriel River was sampled at the following three stations in 1957: at Azusa Powerhouse (Station 50d), at Azusa (Station 50a), and at Whittier Narrows (Station 50). A review of sampling data from Station 50a reveals long periods with no flow, and as a result, this station was discontinued at the end of 1957 in favor of an upstream station at Azusa Powerhouse (Station 50d), established in June 1957. Water sampled at the Azusa Powerhouse was native San Gabirel River water. It was calcium bicarbonate in character and moderately hard. Conductivity ranged from 330 to 417 micromhos. It was class 1 water for irrigation use and met drinking water standards for mineral content.

Raw Colorado River water has at times been released from Puddingstone Reservoir and channeled down Walnut Creek and entered the San Gabriel River at San Bernardino Road, five miles upstream from Station 50. These releases are used for spreading operations in the Montebello Forebay to the Central Coastal Plain Pressure Area. Except for these releases, there was no flow at this station during the summer months of 1957. The native quality of San Gabriel River water at this station was similar to that in upper reaches of the river except that the range in conductivity values increased from 581 to 1,302 micromhos and it was very hard. This native water was class 1 for irrigation uses and met drinking water standards for mineral content. When raw Colorado River water was flowing in the channel or was mixed with the native water, the quality became class 2 irrigation water.

Rio Hondo was sampled at Whittier Narrows (Station 49). Except during periods of rain runoff, the Rio Hondo flow consists primarily of effluent ground water from the Main San Gabriel Basin. In 1957 Rio Hondo water was calcium-sodium bicarbonate in character. Chlorides ranged between 33 and 246 ppm. Total dissolved solids ranged between approximately 320 and 1,000 ppm, at times exceeding the limits recommended for drinking water (Plate B-17). The water at this point has shown a general improvement in quality since 1952 but it still remains class 2 irrigation water.

Mission Creek at Whittier Narrows (Station 49a), consists of ground water rising between San Gabriel River and Rio Hondo, in Whittier Narrows. Mission Creek is tributary to Rio Hondo just below this station. During 1957, the waters of this creek were found to be calcium bicarbonate in character and of good mineral quality. They were moderately hard and usually class 1 for irrigation use. Electrical conductivity reached 1,224



micromhos in March 1957, the highest value reported since sampling began in April 1951. This high conductivity was accompanied by the record chloride of 218 ppm. The water met drinking water standards for mineral content.

A monthly composite sample of raw Colorado River water was collected from the Metropolitan Water District Aqueduct at the F. E. Weymouth Memorial Softening and Filtration Plant at La Vern (Station 69) by the Metropolitan Water District of Southern California. The 1957 mineral analyses were characteristic of Colorado River water and showed no important change since the last report period of 1955-56. The water remained sodium-calcium sulfate in character and very hard. Total dissolved solids have shown a gradual increase in concentration since sampling began at this station in March 1951, reaching a maximum of approximately 820 ppm in February 1957 (Plate B-15).

#### Central Valley Region (No. 5)

For convenience of discussion, this large region is subdivided into four separate areas. The portion of the region making up the Sacramento River Valley is designated as 5a, the San Joaquin River Valley is 5b, the Sacramento-San Joaquin Delta area is 5c, and the Tulare Lake Basin is 5d.

Surface water monitoring samples were collected in this region during 1957 from a total of 101 stations (Plate 1), as indicated in the following tabulation:

Sacramento River Valley (5a)

Sacramento River (11)	Yuba River (2)
McCloud River (1)	Bear River (1)
Pit River (2)	Sacramento Slough (1)
Burney Creek (1)	American River (3)
Cottonwood Creek (1)	Stony Creek (1)
Mill Creek (1)	Colusa Trough (1)
Deer Creek (1)	Clear Lake (2)
Big Chico Creek (1)	Cache Creek (2)
Butte Creek (1)	Cache Creek. North Fork (1)
Feather River (2)	Putah Creek (1)
Indian Creek (1)	Lindsey Slough (1)
South Honcut Creek (1)	Cache Slough (1)

San Joaquin River Valley (5b)

San Joaquin River (21)	Stanislaus River (2)
Salt Slough (1)	Calaveras River (1)
Bear Creek (1)	Mokelumne River (4)
Merced River (2)	Cosumnes River (1)
Tuolumne River (3)	

Sacramento-San Joaquin River Delta (5c)

Delta-Mendota Canal (2)	Rock Slough (1)
Old River (5)	Stockton Ship Channel (1)
False River (1)	Little Potato Slough (1)
Italian Slough (1)	Contra Costa Canal (1)
Indian Slough (1)	Delta Cross Channel (1)
Dutch Slough (1)	

Tulare Lake Basin (5d)

Kern River (3)	Kaweah River (1)
Tule River (1)	Kings River (3)

Surface waters of the Central Valley Region are of varying quality. The waters draining from the Sierra Nevada, and Cascade and Trinity Mountains generally are of excellent quality, while those draining from the Tehachapi Mountains and coastal ranges vary from poor to excellent quality. Valley floor waters vary in quality according to the proportion in which the above groups of waters are mixed and the quantities of wastes discharged to the

streams. Conductivity values in the Central Valley Region ranged between 17.6 micromhos in the Kings River below North Fork (Station 33c) and 6,166 micromhos in the San Joaquin River above Salt Slough (Station 111b) during 1957. Monthly variations in total dissolved solids at 76 stations that have a period of record of five years (1953-1957) are presented graphically on Plates B-20 through B-55 in Appendix B.

#### Sacramento River Valley (5a)

The Sacramento River flows for a distance of about 390 miles and drains the Sacramento Valley. The river originates in the Cascade Range near the base of Mount Shasta, and after passing through Shasta Reservoir, enters the valley proper below Red Bluff. Approximately 250 miles below Red Bluff, the river enters the Sacramento-San Joaquin Delta downstream from the City of Sacramento.

The upper reaches of the river are used primarily for recreation. In the reach between Shasta Dam and the Sacramento-San Joaquin Delta, municipal, industrial, and agricultural uses, in addition to recreational uses, become the predominant forms of water utilization. A large portion of the wastes discharged to the Sacramento River during the summer months are from agricultural drainage. The Cities of Redding and Red Bluff discharge domestic waste, the quality of which is reasonably constant throughout the year. In the City of Sacramento, on the other hand, large cannery operations contribute wastes mainly during the summer season. In addition to the foregoing, increasing quantities of industrial wastes also are discharged to the river.

To maintain a continual check on the quality of the Sacramento River, 11 monitoring stations have been established between the headwaters and the mouth. These stations, selected so as to indicate changes in

quality caused by tributaries and wastes discharged to the river, are, in downstream order: Sacramento River at Delta above Shasta Lake (Station 11), at Keswick (Station 12), near Redding (Station 12a), at Bend (Station 12c), near Hamilton City (Station 13), at Butte City (Station 87a), at Knights Landing (Station 14), at Sacramento (Station 15), at Snodgrass Slough (Station 97), at Rio Vista (Station 16) and at Toland Landing (Station 15a).

With the exception of a heavy metals problem in the vicinity of the Keswick station, the quality of the Sacramento River was excellent. At certain times during 1957 these heavy metals were in sufficient quantities to cause appreciable fish kills. According to the U. S. Fish and Wildlife Service fish kills were recorded in January, February, and September 1957. The source of these heavy metals was apparently Spring Creek, which enters the Sacramento River just upstream from Keswick Dam.\* This creek drains an area occupied by numerous abandoned and operating mines. The drainage from these mines was very acid and carried in solution high concentrations of iron, aluminum, copper, zinc, and probably other toxic metals. When Sacramento River flow reaches Station 12a near Redding, mixing and dilution, and possibly precipitation usually reduces the heavy metals to negligible concentrations.

Wastes discharged into the Sacramento River, although substantial in quantity, are diluted to such an extent by good quality water entering from the western slopes of the Sierra Nevada, that, with the exception of the previously mentioned mine drainage, no serious impairment has been evident so far at any of the Sacramento River sampling points. However,

---

\* "Report to State Water Pollution Control Board on Control of Pollution of Keswick Reservoir", June 14, 1957, Leeds, Hill, and Jewett, consulting engineers, Los Angeles, California, and "Sacramento River, Keswick Reservoir and Vicinity, Fall 1955 and Spring 1956, Stream Survey Report for the State of California", Academy of Natural Sciences, Philadelphia, Pennsylvania.



effects of using the Sacramento River as a conduit for receiving irrigation return water is readily shown by significant differences in conductivity which appear in a comparison of quality at key stations along the length of the river. Three such key stations are: Station 12c at Bend, which is located above most sources of quality degradation; Station 14 at Knights Landing, below most of the sources of irrigation return flow but above the confluences of the major tributary streams; and Station 15 at Sacramento, which lies at the entrance to the Sacramento-San Joaquin Delta. Table 1 shows variations in the flow and quality of the Sacramento River at these three key stations at two different times during 1957. May 1957 was just prior to full irrigation water use and irrigation drainage to the Sacramento River and July 1957 was the time at which the irrigation season was well under way.

TABLE 1  
SACRAMENTO RIVER WATER QUALITY

Station Location	May 1957		July 1957.	
	Flow <sup>a</sup>	Conductance	Flow <sup>a</sup>	Conductance
	(cfs)	(micromhos)	(cfs)	(micromhos)
Bend (12c)	29,900	106	9,640	120
Knights Landing (14)	17,380	117	6,210	209
Sacramento (15)	19,590	158	9,780	164

a - Average of mean daily flows.

Conductance reached a peak at Knights Landing because of return irrigation water and then decreased at Sacramento, reflecting the inflow of the Feather and American Rivers. The same condition, to approximately the same degree, has been noted each year since the program was initiated in April 1951.

Variations in the quality of the McCloud River above Shasta Lake (Station 18) have been slight since sampling began in April 1951. However, the highest conductivity for the period of record, 150 micromhos, occurred in June 1957. The water was calcium bicarbonate in character and suitable for nearly all uses.

Water samples were collected from Pit River near Canby (Station 17a) and near the community of Montgomery Creek (Station 17). The concentrations of mineral constituents at Montgomery Creek have varied only slightly since sampling began in April 1951, while at Canby, where conductivity ranged between 150 and 253 micromhos during 1957, the concentrations were slightly lower during 1956 and 1957 as compared to previous years of record. With the exception of chlorides and magnesium, the concentrations of all constituents decreased between the upstream station at Canby and the downstream station at Montgomery Creek. This drop in salt concentration between the upper and lower station was probably caused by the introduction of waters from tributaries which enter the Pit River between the two stations. A decrease in turbidity, which occurred between the two stations, was attributed to the settling of suspended solids on the flat hydraulic gradient in Big and Fall River Valleys.

Surface water samples collected from Burney Creek near Burney (Station 17c) have shown no appreciable variation in quality since the initiation of the program in April 1951. The total dissolved solids concentrations were less than 100 ppm in 1957 (Plate B-22).

Maximum concentrations of many dissolved constituents in Cottonwood Creek near Cottonwood (Station 12b) during 1957 were noted in February. Total dissolved solids were approximately 190 ppm (Plate B-27),

sodium 15 ppm, chlorides 22 ppm, and total hardness 124 ppm. These values do not represent a significant deviation from concentrations found since April 1951. The water remained bicarbonate type with calcium and magnesium as major cations and suitable for most uses.

Variations in the quality of Mill Creek near Los Molinos (Station 88) have been slight since this station was added to the program in April 1952. During 1957, the water was calcium-sodium bicarbonate in character with conductivity values ranging between 100 and 213 micromhos. The water has been suitable for most uses except that boron has often been present in high enough concentrations to place it in class 2 for irrigation. The maximum boron concentration for 1957 was 0.56 ppm, reported in January.

Samples of water were collected from Deer Creek near Vina (Station 95). This water was bicarbonate type with no major cation, class 1 for irrigation, and met drinking water standards for mineral content. No significant changes in quality have occurred in this creek since sampling was initiated in August 1952. In 1957, the total dissolved solids ranged from a low of 60 ppm in March to a high of 192 ppm in September (Plate B-27).

Surface water samples from Big Chico Creek near Chico (Station 85), showed no noticeable change in water quality since sampling began in July 1952. The water continued to be bicarbonate type, class 1 for irrigation and met drinking water standards for mineral content. Total dissolved solids have ranged between 40 and 240 ppm for the period of record and reached a maximum concentration of approximately 150 ppm during 1957 (Plate B-21).

There have been no significant variations in concentrations of constituents in Butte Creek near Chico (Station 84) since the beginning of

sampling in July 1952. It was a calcium bicarbonate type water, class 1 for irrigation, and met drinking water standards for mineral content. Total dissolved solids have varied between 35 and 95 ppm for the period of record and between 45 and 85 ppm during 1957 (Plate B-22).

Samples of water were collected from the Feather River near Oroville (Station 19), and at Nicolaus (Station 20). At Station 19, the concentration of total dissolved solids ranged between 45 and 80 ppm in 1957 (Plate B-30) and the concentrations of all other constituents were correspondingly low. There was practically no salt pickup between the upstream station near Oroville and the station at Nicolaus. There was only minor seasonal variations in quality and there have been no appreciable changes in the quality of the water since the beginning of the program in April 1951.

Indian Creek, sampled near Crescent Mills (Station 17d), is an important tributary of the Feather River and joins it upstream of the station near Oroville (Station 19). This water was calcium bicarbonate in character, of excellent quality and suitable for nearly all uses. No significant variation in concentration of constituents has been detected at this station since sampling began in April 1951. Total dissolved solids ranged between 68 and 180 ppm, reaching the maximum in August 1957 (Plate B-30).

Samples of water collected from South Honcut Creek near Bangor (Station 90) showed total dissolved solids ranging from 75 to 210 ppm during 1957 (Plate B-50), and no significant change from values reported since July 1952.

Total dissolved solids ranged between 35 and 90 ppm (Plate B-54 and 55) in water samples collected from Yuba River near Smartville (Station 21a) and at Marysville (Station 21). The water continued to be calcium



bicarbonate in character and suitable for nearly all uses. There was no appreciable variation in concentration of constituents between the upstream and downstream stations and fluctuations in quality have been slight since sampling began in April 1951.

Water samples collected from Bear River near Wheatland (Station 78) during 1957 indicate no appreciable changes in quality since December 1951 with the exception of seasonal fluctuations. The water was calcium bicarbonate in character, class 1 for irrigation, and within drinking water standards for mineral content. During 1957, total dissolved solids ranged between 45 and 190 ppm (Plate B-21).

The flow of Sacramento Slough, which was sampled near Knights Landing (Station 14a), is made up almost entirely of irrigation drainage and return flows, and effluent ground waters which enter the slough during the irrigation season. During periods of heavy rainfall, its flow consists of storm runoff. When water is flowing in Sutter Bypass, the slough is submerged. During 1957, the quality pattern at this station was comparable to previous years of record. In 1957, the highest concentration of dissolved salts occurred in February, reaching 312 ppm. After a low of 80 ppm in March, the concentration climbed to 275 in July (Plate B-45). The maximum concentration of dissolved minerals during February resulted from the low flow in the river.

During 1957, surface water samples were collected from the American River at Nimbus Dam (Station 22a), at Fair Oaks (Station 22d), and at Sacramento (Station 22). There was no appreciable variation in water quality from 1955 through 1957. The water in the American River was calcium bicarbonate in character and of excellent quality, with total dissolved

solids at Station 22 ranging between 35 and 50 ppm during 1957 (Plate B-20). This narrow range reflects the absence of sources of degradation and the stabilizing effect of Folsom Dam on quality fluctuations. During 1954, prior to the construction of Folsom Dam, total dissolved solids ranged between 21 and 74 ppm. While waste discharges have not as yet had any apparent effect on the quality of this water, increased development in the area between Folsom Dam and Sacramento could have a detrimental effect on water quality in the future, particularly from a sanitary standpoint.

Surface water samples were collected from Stony Creek near Hamilton City (Station 13a) during 1957. This water was calcium-magnesium bicarbonate in character, with concentration of constituents below the limits for all but the most exacting uses. Conductivity ranged between 260 and 396 micromhos during 1957, reflecting no significant change in the concentration of constituents of this water since the initiation of the monitoring program in April 1951.

The water in Colusa Trough, which is made up of surface runoff and irrigation return flow from the Colusa Basin, was sampled near Colusa (Station 87). Since sampling began in July 1952, analyses have shown this water to be sodium bicarbonate in character and moderately to very hard. Usually during the winter and early spring months the concentrations of total dissolved solids qualitatively place this water in class 2 for irrigation. During the balance of the year, the water in Colusa Trough is class 1. The ranges of hardness and total dissolved solids (Plate B-26) in 1957 were 96 to 356 ppm and 212 to 820 ppm, respectively.

Clear Lake water samples were collected near Clearlake Oaks (Station 40) and at Lakeport (Station 41). No appreciable difference in mineral quality between the two stations has been detected. Conductivity

ranged between 238 and 281 micromhos during 1957, representing no significant change from values found since April 1951. Clear Lake is usually calcium-magnesium bicarbonate and class 2 irrigation water because of the high boron concentrations which varied between 0.67 and 0.91 ppm in 1957. The Clear Lake region has been long recognized as a boron area and the relatively high boron concentrations found in the lake are attributed to the many highly mineralized springs in the area.

Cache Creek, which contains the outflow from Clear Lake, was sampled near Lower Lake (Station 42) and about 40 miles downstream near Capay (Station 80). The water in Cache Creek near Lower Lake was essentially the same in character and quality as in Clear Lake. Concentrations of most constituents changed markedly, however, between Station 42 and Station 80. In February 1957, conductivity increased from 311 to 968 micromhos, chlorides increased from 12 to 145 ppm, and boron concentrations increased from 0.80 to 5.00 ppm between the upper and lower stations. Because of the high boron concentration in Cache Creek, the water was usually class 2 for irrigation at the upstream station and often class 3 at the downstream station.

The increase in constituents between Stations 42 and 80 on Cache Creek has occurred annually since the inception of the sampling program in April 1951 and is directly related to the sources of the flow in Cache Creek. The quality of Cache Creek at Capay results from the mixing of Clear Lake water, and tributary flows which enter Cache Creek between the two stations. When the flow in Cache Creek at Lower Lake is quite low, the quality at Capay reflects the water draining an area having numerous mineralized springs. A major contributor of mineralized water, North Fork of Cache Creek is discussed next.

Cache Creek, North Fork, which enters the main stem about eight miles below Lower Lake, was sampled near Lower Lake (Station 79). This water accounts for some of the increase in concentrations of constituents in the main stem between Lower Lake and Capay. In the North Fork, concentrations of dissolved salts were generally higher than in the main stem. Conductivity ranged between 181 and 563 micromhos in the North Fork during 1957, indicating a slight improvement in quality over previous years since the station was added to the program in December 1951. Relatively high boron concentrations, which ranged from 0.53 to 4.8 ppm during 1957, are characteristic of this stream.

In general, concentrations of constituents in Putah Creek near Winters (Station 81) were significantly lower during 1957 than have previously been reported since sampling began in December 1951. Conductivity, which was reported as 261 micromhos in September 1957 as compared to 789 micromhos in September 1955, is illustrative of the improvement in quality. Boron, which reached a maximum concentration of 0.57 ppm in January 1957, occasionally causes this water to be class 2 for irrigation. However, it was well within the limits for class 1 irrigation water during most of the year. This water is generally suitable for nearly all uses and consistently meets drinking water standards for mineral content.

Lindsey Slough was sampled near Rio Vista (Station 110). While concentrations of most constituents in this water were lower in 1957 than have been reported since September 1952, no cycle or definite trend is indicated. The water remained calcium-magnesium bicarbonate in character with conductivity ranging between 165 and 253 micromhos during 1957 as compared to a range of 164 to 377 micromhos during 1956.



The waters of Cache Slough below Lindsey Slough (Station 110a) were similar to the waters of Lindsey Slough both in character and in concentration of mineral constituents. The conductivity of this water ranged between 110 and 180 micromhos during 1957.

#### San Joaquin River Valley (5b)

The San Joaquin River originates in the Sierra Nevada on the east side of the San Joaquin Valley. It flows in a westerly direction until it reaches the trough of the valley, then turns north and flows approximately 150 miles to the Sacramento-San Joaquin Delta. Friant Dam, which stores water in the foothills, supplies the Friant-Kern and Madera Canals. During the irrigation season water imported from the Delta enters the San Joaquin River at the Mendota Pool through the Delta-Mendota Canal, which at times provides the entire water supply in the reach of the river between Mendota Pool and Fremont Ford Bridge. The diversions below the Mendota Pool are so great that during the irrigation season the river usually goes dry by the time it reaches Dos Palos about 25 miles downstream. Near Fremont Ford, just above the point where the Merced River enters the San Joaquin River, the water in the San Joaquin River consists almost entirely of irrigation return flow. Below this point, the quality in the river is dependent upon the relative volumes of irrigation return water and diluting water from the Merced, Tuolumne and Stanislaus Rivers. Below the confluence with the Stanislaus River, the San Joaquin River enters the Delta area.

During 1957, surface water samples were collected from 21 points on the San Joaquin River (Plate 1):

at Friant (Station 24)	near Grayson (Station 26)
near Biola (Station 24a)	at West Stanislaus Irrigation District (Station 27b)
at Whitehouse (Station 24b)	at Maze Road Bridge (Station 26a)
near Mendota (Station 25)	near Vernalis (Station 27)
near Dos Palos (Station 25a)	at Mossdale Bridge (Station 102)
above Salt Slough (Station 111b)	at Brandt Bridge (Station 101a)
at Fremont Ford Bridge (Station 25c)	at Garwood Bridge (Station 101)
above Merced River (Station 30a)	at San Andreas Landing (Station 112b)
at Hills Ferry Bridge (Station 25b)	at Jersey Point (Station 28b)
at Crows Landing Bridge (Station 26b)	at Antioch (Station 28)
at Patterson Water Company (Station 27a)	

Upstream from the Sacramento-San Joaquin Delta, the San Joaquin River is comprised of two distinctly different waters. Above the Mendota Pool, the river contains native San Joaquin water. In the reach between the Mendota Pool near Mendota (Station 25) and Vernalis (Station 27), the river contains a mixture of large quantities of irrigation return flows, effluent ground waters, and waters from Merced, Stanislaus, and Tuolumne Rivers. Downstream from Vernalis the San Joaquin River enters the Sacramento-San Joaquin Delta complex.

The quality of the San Joaquin River upstream from Mendota Pool has not changed appreciably since the inception of the surface water quality monitoring program in April 1951. The conductivity of water at Friant Dam ranged between 33.2 and 47.8 micromhos during 1957.

The concentrations of most constituents in the San Joaquin River between Mendota Pool and Vernalis have gradually increased since 1951.



Seasonal fluctuations in quality in this reach have been significant in past years and are dependent to a large extent on the respective quantities of flow in the tributary streams and drainage canals. During 1957, the conductivity in this reach of the river ranged between 73.9 micromhos near Mendota (Station 25) and 6,166 micromhos above Salt Slough (Station 111b). The dilution effect of the Merced, Tuolumne, and Stanislaus Rivers was evidenced by the decrease in concentration of constituents immediately below the confluence of the streams. This effect is shown by Table 2 which lists flow, conductivity, and chlorides at 12 stations in this reach of the river for January and July 1957. The Merced River is tributary to the San Joaquin River between Stations 30a and 25b, the Tuolumne River between Stations 27b and 26a, and the Stanislaus River between Stations 26a and 27.

Downstream from Vernalis, the quality of the San Joaquin River is primarily dependent on the export draft of the Tracy and Contra Costa (CVP) pumping plants and the interrelationship between sea water and the quantity of fresh water outflow from the Sacramento-San Joaquin Delta.

During 1957, samples of water were collected from Salt Slough at San Luis Ranch (Station 92a). The waters of this slough consisted of mixture of effluent ground water, irrigation return water, and runoff. The historical data indicates that the quality of this water changes greatly from the winter months when most of the water is effluent ground water, to the summer months, when irrigation return flows are at the peak. As an example, the conductivity of water from Salt Slough decreased from 2,196 micromhos in January to 766 micromhos in July with the introduction of return flows and again increased to 2,000 micromhos in November.

TABLE 2  
SAN JOAQUIN RIVER WATER QUALITY

Station Location	January 1957			July 1957		
	Flow	Conductance	Chlorides	Flow	Conductance	Chlorides
	:(cfs)	:(micromhos):	(ppm)	:(cfs)	:(micromhos):	(ppm)
Mendota (25)	a	73.9	6.7	a	411	61
Dos Palos (25a)	a	208	24	a	371	47
Salt Slough (111b)	a	399	40	a	724	106
Fremont Ford Bridge (25c)	210 <sup>b</sup>	1,646 <sup>c</sup>	301 <sup>c</sup>	163 <sup>b</sup>	998 <sup>c</sup>	174 <sup>c</sup>
Merced River (30a)	a	1,420	213	a	1,269	221
Hills Ferry Bridge (25b)	a	1,373	213	a	1,076	184
Crows Landing Bridge (26b)	a	1,170	158	a	909	143
Patterson Water Company (27a)	a	1,072	151	a	1,011	159
Grayson (26)	608 <sup>d</sup>	1,150	191	450 <sup>d</sup>	971	159
West Stanislaus Irri- gation District (27b)	a	1,060	168	a	994	154
Maze Road Bridge (26a)	1,490 <sup>d</sup>	747	142	760 <sup>d</sup>	930	172
Vernalis (27)	1,900 <sup>d</sup>	645	112	870 <sup>d</sup>	845	154

a - Flow not available.  
b - Average mean daily flow.  
c - Average for month.  
d - Instantaneous flow.

There was a gradual increase in concentration of constituents in Bear Creek near Stevinson (Station 111) between 1951 and 1954, as illustrated by total dissolved solids which reached a maximum of approximately 1,950 ppm in August 1954 and declined sharply to approximately 70 ppm in January 1955 (Plate B-20). Early in 1957, the total dissolved solids again increased, reaching approximately 533 ppm in April. The water has often been class 2 for irrigation because of percent sodium, which reached 66 percent during 1957, and 68 percent in 1956.

Samples of water collected from Merced River below Exchequer Dam (Station 32a) and near Stevinson (Station 32) during 1957 indicated concentrations of most constituents somewhat below those for the 1955-56 reporting period, but closely comparing with values reported between April 1951 and 1955. The water was calcium bicarbonate in character at Station 32a but changed to sodium-calcium bicarbonate at Station 32. The concentration of constituents at both stations were within the limits for class 1 irrigation water and suggested standards for drinking water. The 1957 maximum total dissolved solids concentration of 196 ppm, as derived by means of conductivity vs. total dissolved solids curves, occurred in November (Plates B-35 and B-36). Concentrations increased somewhat between the upstream and downstream stations but the increase was not uniform.

Surface water samples were collected from Tuolumne River below Don Pedro Dam (Station 31a), at Hickman-Waterford Bridge (Station 30), and at Tuolumne City (Station 31). Changes in quality between Stations 31a and 30 and between Stations 30 and 31 were very evident, especially during periods of low flow. Table 3 shows variations in the flow and quality during March and September 1957. The March values occurred during a period of relatively high flow while the September values occurred during a period of low flow.

TABLE 3  
TUOLUMNE RIVER WATER QUALITY

Station Location	March 1957			September 1957		
	Flow <sup>a</sup>	Conductance	Chlorides	Flow <sup>a</sup>	Conductance	Chlorides
	:(cfs):	(micromhos):	(ppm)	:(cfs):	(micromhos):	(ppm)
Don Pedro Dam (31a)	3,160	45.0	1.0	1,460	23.4	0.0
Hickman-Waterford Bridge (30)	2,350	57.2	3.7	114	534	106
Tuolumne City (31)	1,830	114	20	360	753	153

a - Instantaneous flow.

Some of the salt pickup in this water can be attributed to waste discharges from Modesto, possibly from small communities above Modesto, and irrigation return flows from the Waterford and Modesto Irrigation Districts. It is possible that saline connate brines rise to the surface under artesian conditions and flow into the Tuolumne River. Investigations have ascertained that the unrestricted flow of saline brines from natural gas wells, which are located on the river bank near Modesto and near Waterford, are contributing considerable amounts of salts to the river. The combined flow from all of the wells has been estimated at approximately 10 cfs. Chloride concentrations in the wells range up to about 10,000 ppm. Table 3 shows that, while these salts had little effect on the quality of the Tuolumne River when the flow was high, the effect was pronounced when the flow in the river was low. Chloride concentrations were often as high as 100 ppm at Hickman-Waterford Bridge when the flow in the river was below 200 cfs. At Tuolumne City, about 28 miles further downstream, the chlorides were often in excess of 150 ppm when the flow was below 400 cfs. Due to this effect, the quality of Tuolumne River water during periods of low flow was such



as to place it in class 2 for irrigation. The quality of the Tuolumne River has not changed greatly since the start of the sampling program in April 1951.

During 1957, samples were collected from Stanislaus River below Tulloch Dam (Station 29a), and near the mouth (Station 29). No significant changes in the quality of this water have been detected since April 1951. It was usually calcium bicarbonate in character and consistently within the limits for mineral content in drinking water standards and class 1 irrigation requirements. There was evidence of salt pickup from the upper to the lower station. Total dissolved solids (Plate B-51) increased from 41 ppm below Tulloch Dam to 171 ppm near the mouth in September 1957, a pickup of 130 ppm. The increase of other constituents was comparable. This salt pickup was probably due to the irrigation return flows discharged to the river.

Water samples collected in 1957 from the Calaveras River at Jenny Lind (Station 16a) indicate a water of calcium bicarbonate character and excellent mineral quality. There have been no appreciable variations in concentration of constituents since this station was added to the program in June 1951. During 1957, conductivity ranged between 170 and 292 micromhos.

Samples of water were collected from Mokelumne River near Lancha Plana (Station 23a), at Woodbridge (Station 23), below Cosumnes River (Station 23b) and below Georgiana Slough (Station 23c). Concentrations of mineral constituents in this stream were generally less during 1956 and 1957 than corresponding months of previous years. There was no appreciable change in quality between the upstream and downstream stations. Conductivity

in 1957 ranged between 32.9 and 46 micromhos at the upstream station near Lancha Plana and between 38.8 and 71.2 micromhos at the downstream station at Woodbridge. Although it is known that occasionally discharges of wastes containing heavy metals in high concentrations from the Penn Mine enter the Mokelumne River upstream from Station 23a, the heavy metal analyses made during 1957 showed concentrations well below toxic values for fish life.

Cosumnes River was sampled near Michigan Bar (Station 94). This water was of excellent quality, class 1 for irrigation, and below the limits of mineral content for drinking water. Conductivity during 1957 ranged between 55 and 107 micromhos. The variation in concentration of constituents since sampling was initiated in July 1952 has been slight.

#### Sacramento-San Joaquin Delta (5c)

Surface water sampling stations have been established on 11 major waterways in the Sacramento-San Joaquin Delta to monitor quality changes in this area. These waterways, in order of discussion, are:

Delta-Mendota Canal	False River
Old River	Stockton Ship Channel
Italian Slough	Little Potato Slough
Indian Slough	Contra Costa Canal
Rock Slough	Delta Cross Channel
Dutch Slough	

Water samples were collected from Delta-Mendota Canal near Tracy (Station 93) and near Mendota (Station 92). While the concentrations of most constituents during 1957 were slightly below those found in 1955 and 1956 at these stations, examination of the analyses of samples collected since July 1952 indicates no evidence of a general trend in quality change. During 1957, the water was class 1 for irrigation and met drinking water standards for mineral content. Conductance ranged from 158 micromhos to 930 micromhos.



During 1957, surface water samples were collected from Old River near Tracy (Station 103), at Clifton Court Ferry (Station 104), at Orwood Bridge (Station 108), at Holland Tract (Station 108a), and at Mandeville Island (Station 112). Little change in quality of this water has been noted since sampling began in September 1952. During January, February and March of 1957, concentrations of most constituents in the samples collected at Stations 104, 108, and 112 were higher than were found during the remainder of the year. Conductance reached 877 micromhos in March at Station 108 and was comparable at the other two stations. The mineral concentrations at Station 103 did not change appreciably during 1957 with conductance reaching a maximum of 1,040 micromhos in April.

Conductivity of Italian Slough near the mouth (Station 106) reached a maximum of 833 micromhos in February 1957. Each year since sampling began in September 1952, the concentration of constituents in this water has increased significantly during the winter months. Since this slough has no natural outlet, the water stands and becomes stagnant during the winter months. In the summer when pumping is resumed, the stagnant water is replaced by fresh water. This effect is not so pronounced in Italian Slough as in Indian Slough because the sampling station is located near the inlet of the slough and some mixing with Old River water occurs. During 1957, Italian Slough was a sodium-calcium bicarbonate type water, class 1 for irrigation use, and met drinking water standards for mineral content.

Indian Slough was sampled near Brentwood (Station 107). Conductivity in this slough reached 1,460 micromhos in March 1957 and boron reached 2.5 ppm in December. The high boron content was probably due to

effluent ground waters in the area. The concentrations of all constituents in Indian Slough decreased to within the class 1 irrigation limits after pumping was resumed. As in Italian Slough, this quality cycle has been detected each year since September 1952.

During 1957, water samples were collected from Rock Slough near Knightsen (Station 109), Dutch Slough at Farrar Park Bridge (Station 108b), False River at Webb Pump (Station 112a), Stockton Ship Channel on Rindge Island (Station 100), Little Potato Slough at Terminous (Station 99), Contra Costa Canal at First Pump Lift (Station 109a), and Delta Cross Channel near Walnut Grove (Station 98). These waters vary in character from sodium-calcium chloride-bicarbonate to calcium-sodium bicarbonate-chloride, and also vary widely in concentration of constituents. The quality depends largely on the relative flows in the streams draining the Sacramento and San Joaquin drainage basins. Conductivity in these waters ranged from a low of 99.7 micromhos in Little Potato Slough to a high of 1,021 micromhos in Contra Costa Canal during 1957. No trend in the quality variations at these stations has been detected during the period of record.

#### Tulare Lake Basin (5d)

Surface water samples were collected from the Kern River at the following three stations: near Kernville (Station 36b), below Isabella Dam (Station 36a), and near Bakersfield (Station 36). The waters of this river were calcium bicarbonate to sodium bicarbonate in character and of excellent quality. No significant quality changes have been detected since sampling began in April 1951. The quality at the Kernville and Isabella stations was essentially the same during 1957. The Bakersfield station showed slight increases in maximum dissolved solids over the

other stations. At Bakersfield, the maximum total dissolved solids reached 155 ppm while at the other stations it only reached 109 ppm (Plate B-32).

The Tule River was sampled near Porterville (Station 91) and the Kaweah River near Three Rivers (Station 35). These waters were calcium bicarbonate in character with mineral content within the limits for class 1 irrigation water and drinking water uses. During 1957, conductivity ranged from 157 to 426 micromhos in the Tule River and from 34 to 158 micromhos in the Kaweah River. There have been no appreciable variations in the quality of these waters for the period of record.

There has been little variation in the concentration of most constituents in the Kings River since it was first sampled in April 1951. Samples collected from the three stations; below North Fork (Station 33c), below Pine Flat Dam (Station 33b), and below Peoples Weir (Station 34); indicate a water of calcium bicarbonate character, suitable for most uses and with only minor salt contribution from headwaters to mouth. This is illustrated by the samples collected in June 1957 when the electrical conductivity was reported as 17.6 micromhos below North Fork, 28.8 micromhos below Pine Flat Dam, and 40.3 micromhos below Peoples Weir.

#### Lahontan Region (No. 6)

During 1957, surface water samples were collected from eight monitoring stations (Plate 1), as indicated in the following tabulation:

Susan River (1)	Truckee River (2)
Lake Tahoe (3)	Mojave River (2)

The surface waters of this region are bicarbonate in type with calcium as the major cation. The quality of these waters has displayed remarkable stability in that there has been little seasonal and yearly

variation in concentration of constituents since sampling was initiated in April 1951. With the exception of Mojave River, hardness and total dissolved solids were both less than 100 ppm in 1957. Monthly variations in total dissolved solids at seven stations that have a period of record of five years (1953-1957) are presented graphically on Plates B-56 through B-59 of Appendix B.

During 1957 the water of Susan River at Susanville (Station 17b) was of excellent quality and suitable for most uses. It was calcium bicarbonate in character and contained total dissolved solids ranging between 45 and 140 ppm during 1957 (Plate B-58). There has been no appreciable variation in quality since sampling began at this station in April 1951.

Lake Tahoe samples of water were collected at Bijou (Station 39), at Tahoe City (Station 38), and at Tahoe Vista (Station 37). The water of this lake was calcium bicarbonate in character, of excellent mineral quality and suitable for most uses. Conductivity in the lake ranged between 68 and 104 micromhos during 1957, with no appreciable variation between stations. There have been no significant changes in the quality of this water since sampling began in April 1951.

During 1957 there was no appreciable change in quality of the Truckee River between the upstream station near Truckee (Station 52) and the downstream station near Farad (Station 53). It was a bicarbonate type water with calcium as predominant cation. Conductivity ranged between 55 and 106 micromhos during 1957. Quality variations have been insignificant on the Truckee River since the beginning of the program in April 1951.



Mojave River was sampled near Victorville (Station 67) and at The Forks (Station 67a). Station 67a was added to the stream sampling program to monitor the upper reaches of Mojave River. The new station was established in June 1957, and is located immediately below the confluence of the West Fork of Mojave River and Deep Creek.

During summer months, surface flow in the West Fork usually ceases, and Deep Creek remains as the source of surface flow in the Mojave River. For the greater part of the year 1957, surface flow infiltrated into the river sands below Victorville. In years when runoff is above normal, surface flow is continuous from the Forks to beyond Victorville, and at times even to Soda Dry Lake near Baker.

Comparison of analyses of samples from the two stations showed that the water at the Forks was of better quality than the water at Victorville. Conductivity ranged between 387 and 492 micromhos at Station 67 and between 250 and 548 micromhos at Station 67a. The character of the water at both stations was bicarbonate in type, with calcium and sodium the predominant cations.

Waters at both stations were suitable for most beneficial uses, met drinking water standards for mineral content and were class 1 for irrigation. Analyses obtained at Station 67 since the initiation of the stream sampling program in 1951, show that the quality of the water has changed very little.

The City of Victorville discharges sewage to oxidation ponds in the vicinity of the Mojave River upstream from Station 67. Little or no effect on the mineral quality of the water has been detected from this operation.

### Colorado River Basin Region (No. 7)

Water samples were collected in the Colorado River Basin in 1957 from 14 surface water monitoring stations (Plate 1), as indicated in the following tabulation:

Alamo River (2)	All American Canal (1)
New River (2)	Whitewater River (2)
Colorado River (6)	Salton Sea (1)

The Colorado River Basin Region of California is a typical desert area of Southern California. The quality of surface waters varies widely due to high content of soluble minerals in the soils, high evaporation rates, and sparse precipitation. The concentrations of most constituents in the Alamo and New Rivers have generally increased since sampling began. No significant change has been detected in the quality of the waters of the other monitored streams in this region. Occasional heavy rains often result in flash floods of short duration. Rain runoff, although high in silt content, is generally of good mineral quality. Except for the Colorado River, natural surface streams in this region are usually dry throughout the year. A graphical presentation of monthly variation in total dissolved solids at six stations that have a period of record of five years (1953-1957) can be found on Plates B-60 through B-62 of Appendix B.

The Alamo and New Rivers, which enter the United States from Mexico and flow into the Salton Sea, continue to carry irrigation return water, sewage, and canal spills from the All American Canal and distribution canals of the Imperial Irrigation District. The New River still presents a serious water quality problem because of industrial waste and raw sewage discharges from the City of Mexicali in Mexico. Bacterial counts remained high. Several raw sewage discharges within the United States into the Alamo and New Rivers continue to impair the quality of these waters.



Alamo River water, which was sampled at the International Boundary (Station 59) and near Calipatria (Station 60), varied in character from sodium chloride to sodium chloride-sulfate. The water was not of recommended mineral quality for domestic use and was usually class 3 irrigation water. In 1957, the electrical conductivity of samples collected at Station 59 ranged from 3,891 to 6,452 micromhos, while samples at Station 60 ranged from 2,985 to 4,048 micromhos. Boron ranged from 1.00 to 1.98 ppm at Station 59, and from 0.40 to 0.68 ppm at Station 60. A study of available quality records for these stations indicates a gradual increase in dissolved salts since sampling began in April 1951.

New River was sampled at the International Boundary (Station 57) and near Westmorland (Station 58). Comparison of 1957 analyses of samples from these two stations with previously reported analyses of the past six years revealed no significant change in the mineral quality of this water in 1957. The water at both stations remained sodium chloride in character. It was not of recommended quality for domestic use and was class 3 irrigation water. The electrical conductivity of waters sampled during 1957 at Station 57 ranged from 4,405 to 7,462 micromhos and at Station 58 varied from 3,921 to 5,102 micromhos. Boron content of samples from Station 57 ranged from 0.76 to 1.46 ppm, while those from Station 58 varied from 0.76 to 1.10 ppm.

The Colorado River was sampled at the following six points in 1957: near Topock, Arizona (Station 54), at the Metropolitan Water District intake on Lake Havasu (Station 56d), at Parker Dam (Station 55), near Blythe (Station 56c), at Yuma, Arizona (Station 56), and below Morelos Dam at the United States-Mexico border (Station 56b). Water at these stations

was sampled in May and September, except at Lake Havasu, which was sampled monthly by the Metropolitan Water District of Southern California. The predominant cations in Colorado River water were calcium and sodium, and the predominant anion was sulfate. No significant changes in mineral character or quality were detected in samples collected at the Colorado River sampling stations during 1957, when compared with analyses of previous years of record. Colorado River water remained in the "very hard" category with hardness ranging between 350 and 486 ppm. The sulfate content of this water, which reached a maximum of 404 ppm in 1957, usually exceeded the recommended concentration of the United States Public Health Service drinking water standards. The total dissolved solids content of the two samples collected in 1957 at Stations 56 and 56b were reported as 1,016 and 1,023 ppm; and as 1,090 and 1,029 ppm, respectively. These total dissolved solids values exceed the recommended concentration for drinking water and place the water in class 2 for irrigation.

Comparison of analyses showed a significant increase in each of the mineral constituents as the waters moved downstream toward Mexico. This mineral pickup was probably due to reduction of flow through consumptive use, evaporation, and inflow of salts from return irrigation water and waste discharges.

The All American Canal, which was sampled near Pilot Knob (Station 56a), conveys water from the Colorado River at Imperial Dam to the Imperial and Coachella Valleys for irrigation use. The water at this station is usually poorer in mineral quality than the river water at Blythe, but better than the mineral quality of the river water at Yuma. No significant change in quality has been detected during the period of record. All American Canal

water remained class 2 for irrigation use because of excessive electrical conductivity, which reached 1,351 micromhos in May 1957. The sulfate content of this water usually exceeded the recommended standard for drinking water.

Whitewater River was sampled at Whitewater (Station 68) and at Mecca (Station 68b). There has seldom been any flow during the summer months at Station 68. When surface flow diminishes below a certain amount, water is pumped from wells upstream from Station 68 and discharged to the river channel to supplement the natural flow. The entire flow of the river is then diverted and conveyed south to the vicinity of Palm Springs. During 1957, surface water at Station 68 was calcium bicarbonate in character and ranged from moderately hard to very hard. Conductivity at this station ranged between 405 and 483 micromhos. It was class 1 irrigation water, and met drinking water standards for mineral content. Comparison of 1957 analyses of samples from Station 68 with those of prior years showed no significant change in mineral quality.

In July 1957, the station on the Whitewater River at Mecca (Station 68b) was added to the surface water quality monitoring program to monitor the drainage and storm runoff from Coachella Valley. The most accessible site on the Whitewater River near its outlet to the Salton Sea was selected for this station. Except during infrequent periods of heavy precipitation, flow in the Whitewater River extends northwesterly from its outlet only to the vicinity of Indio. This flow consists chiefly of irrigation return and drainage wastes. The water at this station was class 3 irrigation water during 1957, and did not meet drinking water

standards for mineral content. The water was sodium sulfate-chloride in character and was extremely hard. The total dissolved solids content of this water usually exceeded 2,000 ppm and reached approximately 2,800 ppm in December 1957. Sulfates, also characteristically high in this water, were reported as 777 ppm in September 1957. A portion of the treated sewage from the City of Indio is discharged to the Whitewater River approximately 16 miles above this station.

Salton Sea was sampled near the north end at Salton Sea State Park (Station 68a). Salton Sea is situated between Coachella and Imperial Valleys. It receives the waste, surface, and drainage waters of these valleys. During 1956 and 1957, the surface elevation of Salton Sea appeared to be stabilizing following an extensive period of rise. Evaporation from its surface is approximately six feet of water annually.

Salton Sea water contained about 34,300 ppm total dissolved solids in 1957. This water was sodium chloride in character and similar to ocean water. However, its calcium and sulfate contents were greater, and chloride content was less than that of ocean water. No significant change in the mineral quality of Salton Sea water was discernible during 1957, but increases in salt content can be anticipated in the future. The 1957 quality of this water was not appreciably different from previous years of record.

#### Santa Ana Region (No. 8)

During 1957, samples were collected at eight surface water monitoring stations in the Santa Ana Region (Plate 1), as indicated by the following tabulation:



Santa Ana River (4)  
Warm Creek (2)

Chino Creek (1)  
Lake Elsinore (1)

Runoff from this region during 1957 was less than 50 percent of the long-time mean annual runoff. During 1957, conductivity ranged between 208 micromhos in Santa Ana River near Mentone (Station 51b) and 35,399 micromhos in Lake Elsinore near Elsinore (Station 89). Little or no deterioration in quality of water was noted in comparing 1957 analyses with those of earlier years. The quality of surface water improves noticeably in periods of high flow, when better quality rain runoff contributes to the normal flow.

Monthly variations in total dissolved solids at seven stations that have a period of record of five years (1953-1957) are presented graphically on Plates B-63 through B-65 of Appendix B. Lake Elsinore (Station 89) is not presented in this fashion because of a long period of dryness in the lake.

The Santa Ana River was sampled at the following four stations: at Mentone (Station 51b), at Riverside above both the Metropolitan Water District blowoff and Riverside sewage treatment plant (Station 51d), at Norco (Station 51e), and near Prado Dam (Station 51a).

Santa Ana River water quality showed a slight improvement in 1957 over previous years since 1951 when sampling was initiated, principally because no Colorado River water was discharged into the natural stream flow from the Metropolitan Water District blowoff near Arlington. Since October 1956, deliveries of raw Colorado River water to Orange County have been made to Santiago Reservoir or discharged to Santa Ana River, which are about six miles below Prado Dam (Station 51a).



In 1957, the character of water in the Santa Ana River varied from calcium bicarbonate above Riverside to generally calcium-sodium bicarbonate-chloride at and below Norco.

Surface water near Mentone (Station 51b) continued to be class 1 irrigation water and met drinking water standards for mineral content. The water ranged from soft to moderately hard, with the maximum being 101 ppm in September 1957. The character was generally calcium bicarbonate with magnesium and sodium as secondary cations. Total dissolved solids at this station did not exceed 200 ppm during 1957 (Plate B-63). The quality of the water at this station was excellent and showed little effect from the recreational developments in the headwater drainage area above this station.

Water in the Santa Ana River at Riverside (Station 51d) showed increases in mineral constituents in 1957 over the previous six-year averages. Total dissolved solids content ranged between 565 and 760 ppm (Plate B-64) and hardness ranged from 278 to 365 ppm. The water was calcium bicarbonate in character. Although the water at this station has usually been class 1 or 2 irrigation water, based primarily upon total dissolved solids, it has met drinking water standards for mineral content. Warm Creek tributary inflow, which carries some sewage treatment plant effluent, discharges to the Santa Ana River channel above this station, and there are some irrigation return water discharges upstream from this station. These waste waters were the probable cause of the increase in mineral content of the water at this station over that at Mentone.

Santa Ana River at Norco (Station 51e) has shown a slight improvement of water quality since its addition to the program in September 1955. The water was calcium-sodium bicarbonate-chloride in character and very hard.

Electrical conductivity, which reached a maximum of 1,115 micromhos in 1957, placed this water in class 2 for irrigation, though all other factors indicated it to be suited for most crops. The water samples collected at this station in 1957 met drinking water standards for mineral constituents. Effluent from the City of Riverside's sewage treatment plant, although normally conveyed downstream for irrigation use, was on rare occasions discharged to the river above this station.

Samples of water taken from Santa Ana River near Prado Dam (Station 51a) in 1957, showed a slight improvement in water quality over previous years since 1951. The character of the water was calcium-sodium bicarbonate-chloride, with temporary variations in prominence of anion constituents. The water was very hard, and was class 1 irrigation water except at times electrical conductivity, with a maximum of 1,038 micromhos in 1957 slightly exceeded the standard limit for this class. Although mandatory drinking water standards for mineral content were met, total dissolved solids which ranged from 506 to 686 ppm (Plate B-64) exceeded the nonmandatory (desirable) limit of 500 ppm. The City of Chino sewage treatment plant discharges its effluent waste to Chino Creek, which is tributary to Santa Ana River above Prado Dam. There was little change in mineral content between Station 51e, at Norco, and Station 51a.

Warm Creek was sampled at two points: at San Bernardino (Station 50c), and at Colton (Station 50b).

Warm Creek at San Bernardino (Station 50c), upstream from the San Bernardino sewage treatment plant, is sampled to monitor the natural flow of the creek. Virtually all natural flows were diverted below Station 50c into Meeks and Daley Canal, to be used for irrigation during 1957.

The quality of natural flow has remained about the same since 1954, when a general increase in the concentration of most constituents over previous years was noted. The water was generally calcium bicarbonate in character and varied from soft to very hard in 1957. Total dissolved solids ranged between 296 and 453 ppm (Plate B-65). It was class 1 irrigation water and met drinking water standards for mineral content.

Warm Creek at Colton (Station 50b) is sampled to monitor the effect of San Bernardino sewage treatment plant effluent on surface water quality in Warm Creek. The sewage effluent was formerly diverted into Riverside Canal for irrigation use; however, in 1957, it flowed to the Santa Ana River. There was no apparent change in mineral quality in 1957 from previous years. Its character was generally sodium-calcium bicarbonate-chloride. Total dissolved solids ranged between 374 and 584 ppm during 1957 (Plate B-65). The water was class 1 irrigation water and met drinking water standards for mineral constituents. The water was moderately hard to very hard.

Chino Creek near Chino, at Pine Avenue (Station 86) is sampled to monitor the effects of the effluent wastes of Chino sewage treatment plant. During 1957, the flow at this station consisted chiefly of this effluent except during periods of rain runoff. Analyses of samples taken at this station in 1957 indicated no significant change in quality from previous years. The water remained calcium-sodium bicarbonate in character and was very hard. It was usually class 1 irrigation water, although at times electrical conductivity, which was 1,006 micromhos in April 1957, slightly exceeded the upper limit of class 1.

Lake Elsinore near Elsinore, at north shore, (Station 89) was dry for 11 months prior to the time of sampling in February and March 1957. Rains of January and February 1957 left a thin layer of water on the lake bottom. Total dissolved solids exceeded 20,000 ppm in the two samples collected in 1957. The quality of water in this lake has been quite variable during the period of record. However, in all cases it has been found to be class 3 irrigation water.

#### San Diego Region (No. 9)

During 1957, samples were collected from six of the seven sampling stations in the San Diego Region (Plate 1). One sampling station was dry throughout 1957. These sampling points are indicated in the following tabulation:

Santa Margarita River (1)	San Diego River (1)
San Luis Rey River (1)	Forester Creek (1)
Escondido Creek (1)	Tia Juana River (1)
San Dieguito River (1)	

During 1957, drouth conditions prevailed throughout the San Diego Region. Eleven reservoirs of the City of San Diego held only 14.5 percent of their storage capacity on October 1, 1957. The Metropolitan Water District imported Colorado River water at about the maximum rated capacity of the two existing conduits. Construction of a third barrel was authorized in early 1957.

Monthly variations in total dissolved solids for four stations that have a period of record of five years (1953-1957) are presented graphically on Plates B-66 and B-67 of Appendix B. These graphs are not presented for the stations on the San Dieguito and Tia Juana Rivers because of extensive periods of no flow.



Samples collected from Santa Margarita River near Fallbrook (Station 51c) in 1957 showed that the water continued to be sodium bicarbonate-chloride in character and very hard. It was class 2 for irrigation use during 1957 with conductivity ranging between 1,226 and 1,592 micromhos. It met drinking water standards for mineral content, except at times when chlorides, which ranged between 148 and 274 ppm, exceeded the recommended limit. Water quality at this station in 1957 showed a slight improvement over that of the previously reported period (1955-1956), but the concentration of most constituents remained higher than the period 1951 through 1954. Santa Margarita River had a year-round surface flow, but summer discharges were very small.

San Luis Rey River was sampled near Pala (Station 62). This sampling point is at a diversion dam which at times of flow diverts the entire flow in the river. The analyses of samples collected at this station in 1957 show a calcium-sodium bicarbonate-chloride type water which was very hard and, in general, comparable in quality to that found in previous years of record. Conductivity ranged between 641 and 762 micromhos during 1957. It was class 1 irrigation water and met drinking water standards for mineral content. Due to drought conditions prevailing in 1957, the river was dry in September and October for the first time since the establishment of the statewide stream sampling program in 1951.

The flow of Escondido Creek near Harmony Grove (Station 63) usually consists of City of Escondido sewage treatment plant effluent and, at times, stone quarry cooling water containing cutting waste. In 1957, a small earth dam 200 yards downstream from this station remained in place throughout the year and stored runoff. Ponded waters at times during 1957



extended upstream beyond the station. During these periods, water samples were collected from the area of the pond effected by the inflow. The creek did not dry up during the summer of 1957 as it has in previous years. The concentrations of most constituents in this water during 1957 were slightly lower than values reported in 1956, but were about the same as those reported during previous years of record. Water at Station 63 was sodium chloride-sulfate in character and was very hard. It was class 2 irrigation water during 1957 due to conductivity which ranged between 1,218 and 2,247 micromhos and chlrodes which ranged between 173 and 353 ppm. The chloride concentrations at this point usually exceeded both the class 1 irrigation limit and the recommended limit for drinking water.

San Dieguito River below San Pasqual Valley (Station 64) was dry during 1957, continuing a condition which has existed since June 1954, when it was last sampled.

San Diego River was sampled at Old Mission Dam (Station 65). In February and March 1957, San Diego River carried storm water runoff. During the remainder of the year, water was ponded above and below the dam, and samples were collected from the downstream pond.

Analyses of 1957 samples show that the character of the water continued to be sodium chloride and that the water was very hard. Conductivity ranged between 2,137 and 4,098 micromhos and chlorides ranged between 408 and 1,060 ppm. It was class 2 irrigation water and usually exceeded recommended limits for total dissolved solids and chloride concentrations in drinking water. The concentrations of most constituents in this water in 1956 and 1957 were about the same and indicate a general degradation of the quality found since April 1951.

Forester Creek at Mission Gorge Road (Station 65a), in San Diego River Valley, was established in June 1957, to monitor the quality of runoff from El Cajon Valley. The City of El Cajon discharges its sewage plant effluent to this creek channel. It flows in a northerly direction to the San Diego River channel.

Analyses of 1957 samples show the creek water at Station 65a to be sodium chloride-sulfate in character and very hard. It was usually class 2 or 3 irrigation water, with conductivity ranging between 1,718 and 2,342 micromhos, chlorides ranging between 312 and 448 ppm, and boron ranging between 0.24 and 1.05 ppm. The chloride and total dissolved solids content of this water has usually exceeded recommended limits for drinking water. Bacterial counts were generally high.

Tia Juana River at the International Boundary (Station 66) was dry, except in January and November 1957. Rodrigues Reservoir, ten miles upstream from the station, controls practically all of the surface runoff above this station.

Analyses of the two samples collected in 1957 showed that the character of the water continued to be sodium chloride. These analyses also showed that the river water was class 1 for irrigation, with 935 micromhos conductivity reported in January, and 715 micromhos reported in November. The water was moderately hard, and it met the recommended drinking water standards for mineral constituents. The concentration of constituents in the two samples collected in 1957 were significantly lower than concentrations found in previous years of record.

The brief flows in 1957 carried trash and some domestic wastes from the portions of the City of Tijuana adjoining the river channel. Bacterial counts were high, and it is suspected that there may be numerous waste discharges to the river channel in Mexico.



SU

Station  
number

**NORTH**

- 1 Klamath
- 2 Klamath
- 3 Klamath
- 3a Smith R
- 4 Trinity
- 4a Trinity
- 5 Eel River
- 6 Eel River
- 7 Eel River
- 8 Russian
- 8a Russian
- 9 Russian
- 10 Russian
- 10a Russian Valley
- 10b Russian

**SAN FRANCISCO**

- 28a Carquinez
- 72 Napa River
- 73 Alameda
- 74 Los Gatos
- 82 Coyote

**CENTRAL**

- 43a Salinas
- 45 Santa Ynez
- 45a Santa Ynez
- 75 San Lorenzo
- 76 Soquel
- 77 Pajaro
- 83 Carmel
- 96 Uvas

**LOS ANGELES**

- 45b Matilija
- 46 Santa Clara
- 46a Santa Clara
- 46b Santa Clara
- 46c Piru
- 46d Sespe
- 46e Santa Clara
- 47 Los Angeles
- 48 Los Angeles
- 49 Rio Hondo
- 49a Mission
- 50 San Gabriel
- 50a San Gabriel
- 50d San Gabriel
- 61 Ventura
- 69 Metropac
- 70 Mono-O
- Fernando

**CENTRAL**

- 11 Sacramento
- 12 Sacramento
- 12a Sacramento
- 12b Cottonwood
- 12c Sacramento
- 13 Sacramento
- 13a Stony Creek
- 14 Sacramento
- 14a Sacramento Land
- 15 Sacramento
- 15a Sacramento





# STREAM SAMPLING STATIONS SURFACE WATER QUALITY MONITORING PROGRAM

1957

Station number Stream

## NORTH COASTAL REGION (No. 1)

- 1 Klamath River near Copco
- 2 Klamath River at Keswick
- 3 Klamath River near Klamath
- 4 Klamath River near Crescent City
- 5 Trinity River near Crescent City
- 6 Trinity River at Lewiston
- 7 Eel River near McWane
- 8 Eel River at Scotia
- 9 Eel River near Marysville
- 10 Russian R. East Fork near Colusa
- 11 Russian R. near Colusa
- 12 Russian R. near Healdsburg
- 13 Russian R. at Geboville
- 14 Russian R. East Fork at Potter Valley Power House
- 15 Russian River near Ukiah

## SAN FRANCISCO BAY REGION (No. 2)

- 26a San Joaquin River at Martinez
- 27 Napa River near St. Helena
- 28 Alameda Creek near Niles
- 29 Los Gatos Creek at Los Gatos
- 30 Coyote Creek near Martinez

## CENTRAL COASTAL REGION (No. 3)

- 31a San Joaquin River at Paso Robles
- 32 Santa Ynez River below Los Laureles Canyon
- 33 Santa Ynez River at Solvang
- 34 San Lorenzo River at Big Trees
- 35 Noyo River at Ukiah
- 36 Eel River near Ukiah
- 37 Eel River near Ukiah
- 38 Eel River near Ukiah
- 39 Eel River near Ukiah
- 40 Eel River near Ukiah

## LOS ANGELES REGION (No. 4)

- 41 Mettula Creek above Matilda Dam
- 42 Santa Clara River at Los Angeles
- 43 Ventura County Lake
- 44 Santa Clara R. near Santa Paula
- 45 Santa Clara R. at Blue Hill
- 46 Santa Clara R. at Blue Hill
- 47 Santa Clara R. at Blue Hill
- 48 Santa Clara R. at Blue Hill
- 49 Santa Clara R. at Blue Hill
- 50 Santa Clara R. at Blue Hill

## CENTRAL VALLEY REGION (No. 5)

- 51 Sacramento River at Delta
- 52 Sacramento River at Keswick
- 53 Sacramento R. near Redding
- 54 Cottonwood Cr. near Cottonwood
- 55 Sacramento R. at Hood
- 56 Sacramento R. at Hamilton City
- 57 Slough Creek at Hamilton City
- 58 Sacramento R. at Knights Landing
- 59 Sacramento Slough at Knights Landing
- 60 Sacramento River at Sacramento
- 61 Sacramento R. at Toland Landing

Station number Stream

- 62 Sacramento R. at Rio Vista
- 63 Calaveras R. at Jerry Lind
- 64 Pit River near Colusa
- 65 Pit River near Colusa
- 66 Pit River near Colusa
- 67 Pit River near Colusa
- 68 Pit River near Colusa
- 69 Pit River near Colusa
- 70 Pit River near Colusa
- 71 Pit River near Colusa
- 72 Pit River near Colusa

## LAHONTAN REGION (No. 6)

- 73 San Joaquin R. near Grapen
- 74 San Joaquin R. at Mass Road Bridge
- 75 San Joaquin R. at Grapen
- 76 San Joaquin R. near Grapen
- 77 San Joaquin R. near Grapen
- 78 San Joaquin R. near Grapen
- 79 San Joaquin R. near Grapen
- 80 San Joaquin R. near Grapen
- 81 San Joaquin R. near Grapen
- 82 San Joaquin R. near Grapen

## COLORADO RIVER BASIN REGION (No. 7)

- 83 Colorado R. near Tropic, Arizona
- 84 Colorado R. at Parker Dam
- 85 Colorado R. at Yuma, Arizona
- 86 Alamo River at Parker Dam
- 87 Colorado River below Pilot Knob
- 88 Colorado River below Pilot Knob
- 89 Colorado River below Pilot Knob
- 90 Colorado River below Pilot Knob
- 91 Colorado River below Pilot Knob
- 92 Colorado River below Pilot Knob

## SANTA ANA REGION (No. 8)

- 93 Warm Creek at Chino
- 94 Warm Creek at San Bernado
- 95 Santa Ana River near Prado Dam
- 96 Santa Ana River near Prado Dam
- 97 Santa Ana River near Prado Dam
- 98 Santa Ana River near Prado Dam
- 99 Santa Ana River near Prado Dam
- 100 Santa Ana River near Prado Dam
- 101 Santa Ana River near Prado Dam
- 102 Santa Ana River near Prado Dam

## SAN DIEGO REGION (No. 9)

- 103 Santa Margarita R. near Fallbrook
- 104 San Luis Rey River near Pala
- 105 Colorado Creek near Hemet, Oregon
- 106 San Jacinto R. below San Jacinto Valley
- 107 San Jacinto R. at El Estero Dam
- 108 San Jacinto R. at El Estero Dam
- 109 San Jacinto R. at El Estero Dam
- 110 San Jacinto R. at El Estero Dam
- 111 San Jacinto R. at El Estero Dam
- 112 San Jacinto R. at El Estero Dam



STATE OF CALIFORNIA  
DEPARTMENT OF WATER RESOURCES  
DIVISION OF RESOURCES PLANNING  
WATER QUALITY INVESTIGATIONS  
STREAM SAMPLING STATIONS  
SURFACE WATER QUALITY MONITORING  
PROGRAM  
1957  
SCALE OF MILES  
0 50 100

A P P E N D I X    A

PROCEDURES AND CRITERIA



A P P E N D I X    A

PROCEDURES AND CRITERIA





## TABLE OF CONTENTS

### APPENDIX A

	<u>Page</u>
Field Methods and Procedures . . . . .	A-2
Laboratory Methods and Procedures . . . . .	A-3
Procedures and Interpretation of Results for Water Pollution Radioassay . . . . .	A-5
Water Quality Criteria . . . . .	A-9
Criteria for Drinking Water . . . . .	A-9
Criteria for Irrigation Water . . . . .	A-12
Criteria for Industrial Water . . . . .	A-12
Criteria for Fish and Aquatic Life . . . . .	A-13

### TABLES

<u>Table number</u>		<u>Page</u>
A-1	Types of Analyses . . . . .	A-4
A-2	Limiting Concentrations of Mineral Constituents in Drinking Water . . . . .	A-10
A-3	Hardness Classification of Waters, U. S. Geological Survey . . . . .	A-11
A-4	Qualitative Classification of Irrigation Waters . . . . .	A-12
A-5	Water Quality Tolerance for Industrial Uses . . . . .	A-14

## Field Methods and Procedures

Water samples are collected in May and September each year for standard mineral, and heavy metals analyses and radiological assay. Water samples are collected the other ten months for partial mineral analysis. Duplicate samples are collected monthly for bacterial examination and are kept in portable ice boxes until mailed to the laboratory in special containers. Every effort is made to get the samples to the laboratory as quickly as possible.

At the time the samples are collected for laboratory examination, field determinations are made for dissolved oxygen (modified Winkler method), water temperature and pH. Visual inspection is made of the stream or lake and the physical conditions are noted.

Where possible, the sampling stations have been selected at bridges to permit the collection of the sample from the center of the stream. When bridges are not available, the sample is collected from the bank of the stream. Where water depth permits, the mineral and dissolved oxygen samples are collected with an integrating sampler which obtains a representative sample of the vertical cross section of the stream. Bacterial samples are collected by inverting a sterilized bottle and dipping at least four inches below the surface.

Where possible, the sampling stations have been selected so as to be at or near stream gaging stations so that gage heights can also be recorded at the time the water samples are collected. Instantaneous stream discharges at the time of sample collection are then obtained. In cases where instantaneous discharges are not available, mean daily discharges are used.

Agencies participating in the field sampling program are listed below, together with the number of stations sampled monthly by each agency:

<u>Agency</u>	<u>Number of stations sampled</u>
Department of Water Resources	121
Department of Public Health, Bureau of Sanitary Engineering	23
State Water Pollution Control Board	3
Department of Fish and Game	1
United States Bureau of Reclamation	18
United States Corps of Engineers	4
United States Geological Survey	6
Metropolitan Water District of Southern California	2
City of San Bernardino	2
City of Los Angeles, Department of Water and Power	1
City of Los Angeles, Department of Public Health	1
City of Long Beach, Department of Public Health	<u>1</u>
Total	183

#### Laboratory Methods and Procedures

Mineral analysis and determination of heavy metals are performed by the Water Quality Branch of the United States Geological Survey, and by the Department of Water Resources laboratories located in Sacramento, San Bernardino, and Riverside. Bacterial examinations are made by the California Department of Public Health, Division of Laboratories, in Berkeley and Los Angeles.

Methods of mineral and bacterial analysis, in general, are those described in the American Public Health Association publication entitled

"Standard Methods for the Examination of Water and Sewage", 10th Edition, 1955. In some cases the methods described in the following publications also have been employed:

- (1) U. S. Geological Survey, "Methods of Water Analysis", 1950,
- (2) California Department of Water Resources, "Tentative Methods of Water Analysis", September 1960.

Table A-1 indicates the constituents analyzed in connection with this program:

TABLE A-1

Types of Analyses

Constituent	:Standard: :mineral:	Partial: :mineral:	Bacterial:	Radiological
Specific conductance ( $EC \times 10^6 @ 25^\circ C$ )	X	X		
pH <sup>a</sup>	X	X		
Total dissolved solids (TDS)	X			
Percent sodium (%Na)	X	X		
Hardness	X	X		
Turbidity	X	X		
Coliform			X	
Temperature <sup>b</sup>	X	X		
Dissolved oxygen (D.O.) <sup>b</sup>	X	X		
Calcium (Ca)	X	X		
Magnesium (Mg)	X	X		
Sodium (Na)	X	X		
Potassium (K)	X			
Carbonate ( $CO_3$ )	X	X		
Bicarbonate ( $HCO_3$ )	X	X		
Sulfate ( $SO_4$ )	X			
Chloride (Cl)	X	X		
Nitrate ( $NO_3$ )	X			
Fluoride (F)	X			
Boron (B)	X	X		
Silica (Si)	X			
Phosphate ( $PO_4$ )	X			
Zinc (Zn) <sup>c</sup>	X			
Iron (Fe) <sup>c</sup>	X			
Copper (Cu) <sup>c</sup>	X			
Aluminum (Al) <sup>c</sup>	X			
Manganese (Mn) <sup>c</sup>	X			
Arsenic (As) <sup>c</sup>	X			
Hexavalent chromium ( $Cr^{+6}$ ) <sup>c</sup>	X			
Dissolved alpha				X
Solid alpha				X
Dissolved beta				X
Solid beta				X

a. pH determined both in the field and in the laboratory.

b. Field determination.

c. These constituents are normally designated as heavy metals.

Radiological assays are performed by the California Disaster Office's laboratory in Sacramento using the procedures set forth below:

Procedures and Interpretation of Results\*  
for Water Pollution Radioassay

I. ANALYTICAL PROCEDURES

A. Sample Preparation

1. Samples are collected, where possible, from the center of the stream in one-half gallon jugs during the routine stream sampling program.
2. On receipt in the laboratory, each sample is well mixed, and two 250 ml aliquots taken. Each is acidified with a few drops of glacial acetic acid, and two drops of colloidal graphite suspension (Aquadag) added.
3. The aliquot is filtered under suction through a membrane ("Millipore") filter, which retains suspended particulate matter of approximately 0.2 microns diameter and larger. Filters are treated with an antistatic preparation (Merix Anti-Static No. 79-OL) to eliminate any extraneous electrostatic charge.
4. The filtrate is placed in a 250 ml volumetric flask, inverted and the mouth placed in a 1-3/4" x 1/4" aluminum culture dish in a "chicken-feeder" type arrangement. The flask is supported by a ring stand; the dish rests on a hotplate adjusted so that the sample is taken to dryness at a temperature well below boiling.
5. At this point there are duplicate samples of both suspended solids and dissolved material from each original water sample ready for determination of radioactive content.

B. Counting Techniques

1. Two determinations are made on each sample, one for gross beta, and one for gross alpha radioactivity. This represents a total of eight determinations for each original sample.
2. Beta activity is determined with an internal gas flow counter operating in the proportional region, using argon-methane mixture as a flow gas. Background determinations are made before the first sample count each day, and then after each two sample counts throughout the day. Determinations of counter efficiency

---

\* Prepared by California Disaster Office, Radiological Service, revised September 11, 1957.



are made with a reference standard (thallium - 204) at least twice daily. Each determination of sample and background count rate is made for a total of 4,096 counts.

3. Alpha activity is determined with a scintillation counter utilizing an activated zinc sulfide phosphor sample. Background and efficiency measurements are made in the same manner as are the beta measurements except that polonium - 210 is used as an alpha reference standard and each determination of sample and background count rate is made for a pre-set time of 32 minutes. Since samples are run in duplicate, the total time for each sample count and background determinations is 64 minutes.

### C. Calculations

1. Results are expressed as micro-micro curies per liter ( $\mu\mu\text{c/l}$ ). One micro-micro curie is equivalent to 2.22 disintegrations per minute. Four values are reported for each sample: (a) beta activity in the solids retained on the filter, (b) beta activity in the filtrate (dissolved material), (c) alpha activity in the solids, and (d) alpha activity in the filtrate.
2. Sample counts are corrected for background and geometric efficiency.
3. Standard statistical procedures are utilized to compute the 0.9 error. The final result is expressed (symbolically) as  $x \pm y \mu\mu\text{c/l}$ . This means that in a series of determinations on the same sample, the value of  $x$  should fall between  $x - y$  and  $x + y$ , 90% of the time.
4. In cases where zero or negative values are included between the limits of  $x + y$  and  $x - y$  the result is reported as 0.

## II. LIMITATIONS OF METHODS EMPLOYED

### A. Sample Preparation

A perfect sample for determination of radioactive content would be infinitely thin, and would contain all of the constituents of the original material except the water.

In practice, those criteria are virtually impossible to attain. Essentially infinitely thin samples can be prepared only from water with low solid and dissolved salt content. Some solid and dissolved materials are adsorbed on the walls of vessels used in sample collection and preparation. Volatilization and losses from spattering during volume reduction cannot be completely avoided. Thus, obviously, radioassay results are dependent upon sample preparation techniques.

## B. Nature of the Radioactive Disintegration Process and the Measurement thereof

At least three basic phenomena make the exact determinations of low levels of radioactivity extremely difficult. These are:

1. The random nature of the radioactive disintegration process limiting the accuracy of any determination because of statistical fluctuations inherent in the counting data.
2. The low ratio of sample count to background count. Any detector of radioactivity always measures (in the absence of an active sample) at a certain - and not always constant - level, which is termed the background radiation level. This is caused by cosmic radiation, traces of naturally occurring radioactive materials, and sometimes by "noise" characteristic of the electronic equipment used. In making determinations on samples in which the counting rate is only slightly higher than the background counting rate, inherent errors are relatively large.
3. Self-absorption. Unless samples are essentially infinitely thin, alpha and low-energy beta radiation arising from the lower layers of the samples may not penetrate the upper layers, and therefore remain undetected.

Corrections can be made for self-absorption when dealing with known radioisotopes. In cases where the contaminant is not identifiable, these corrections cannot, as a rule, be made.

## C. Calculations

There are three factors which can lead to errors in the reported results. These are:

1. Geometric efficiency. This factor is determined using artificial standards. These are not prepared in the same manner as samples. Also it is possible that the energy of radiations emanating from the two standards may be significantly different from the unknown. Both of these considerations make the factors used rather artificial, and somewhat in error. It is not possible to determine the magnitude of this error, although it is probably not large in most cases.
2. Errors in sample count. Reasons for this were discussed in Sections A and B above.
3. Errors in confidence limits. Statistical computations made are based on the Gaussian approximation of the Poisson distribution law. At low count rates this approximation is subject to error.

The calculated confidence limits are based solely on statistical fluctuations caused by the random nature of the radioactive disintegration process. It is assumed that counts produced by background radiation and by electronic noise are also random.

All of the foregoing would tend to indicate that absolute determination of low levels of radioactivity is impossible. This is true, but by taking every possible measure to reduce sources of error, it is possible to obtain a relatively accurate measure of these low levels. As activity levels increase from near background, the precision of measurement increases correspondingly.

### III. LIMITS OF DETECTABILITY

#### A. Minimum Detectable Levels

1. Beta Activity. Equipment and techniques used are such that the minimum reliably detectable beta activity amounts to 7-8  $\mu\text{c}/\text{l}$ .
2. Alpha Activity. Due principally to lower levels of alpha background radiation, alpha activity of the order of 1  $\mu\text{c}/\text{l}$  can be reliably detected.

There is one situation in which it is not possible to report such small amounts of activity. Some stream samples contain particulates of an amount and size distribution that causes the filter to clog. In such cases, it is not possible to filter a full 250 ml sample. Consequently, in applying the volume factor (see Sample Calculations) to subsequent calculations, a large error is introduced.

#### B. Minimum Detectable Changes in Levels of Radioactivity

Knowing minimum detectable quantities of radioactivity, it is then pertinent to inquire as to the minimum increases above these which can be reliably measured. It is not possible to assign fixed values here, but it amounts to about 2  $\mu\text{c}/\text{l}$  for beta, and 0.3  $\mu\text{c}/\text{l}$  for alpha contamination.

### IV. INTERPRETATION OF RESULTS

The various factors which limit the accuracy of measurement should be kept in mind in making interpretations of results. These factors are of considerable consequence for determinations which are only slightly above the background level, which is generally the case here.

The maximum concentration of radioactive contaminants of unknown nature in drinking water has been set at 100  $\mu\text{c}/\text{l}$ . In this study, levels this high are generally not expected. The purpose is to establish a base-line or background level, and to provide a continuing check to determine if and when increases occur as a result of rapidly expanding peacetime uses of radioactive materials.

## V. SAMPLE CALCULATIONS

$R_s$  = Average count rate of duplicate samples = 55 counts/minute

$R_b$  = Average count rate of background determinations = 50 counts/minute

Net count =  $R_s - R_b = 55 - 50 = 5$  counts/minute

$t$  = time of sample count = time of background count = 64 minutes

Activity =  $\frac{5 \text{ c/m} \times 4 \text{ (volume factor to put on a liter basis)}}{0.5 \text{ (geometric efficiency factor)} \times 2.22 \text{ d/m/}\mu\text{c}} = 18.0 \mu\text{c/l}$

$$0.9 \text{ confidence level} = 1.645 \times \sqrt{\frac{R_s}{t_s} + \frac{R_b}{t_b}}$$

$$= 1.645 \times \sqrt{\frac{55}{64} + \frac{50}{64}}$$

$$= 2.1 \text{ counts/minute}$$

$$\frac{2.1 \times 4}{.5 \times 2.22} = 7.6 \mu\text{c/l}$$

Thus the activity of this sample is  $18.0 \pm 7.6 \mu\text{c/l}$ .

This means that in a series of determinations on this sample, 90% of the time the value would fall between 10.4 and 25.6  $\mu\text{c/l}$ .

This basic formula is used for alpha and beta determinations. For alpha,  $t_s$  and  $t_b$  are constant. For beta,  $t_s$  and  $t_b$  are variable and are functions of  $R_s$  and  $R_b$ , respectively.

### Water Quality Criteria

Criteria currently used by the Department of Water Resources to determine acceptability of water for the most common beneficial uses are described hereinafter. In general, the values presented herein should be considered only as guides to judgment, and not as absolute limiting standards.

#### Criteria for Drinking Water

Chapter 7 of the California Health and Safety Code contains laws and standards relating to domestic water supply. Section 4010.5 of this code



refers to the drinking water standards promulgated by the United States Public Health Service for water used on interstate carriers. These criteria have been adopted by the State of California. They are set forth in detail in United States Public Health Report, Volume 61, No. 11, March 15, 1946, reissued in March 1956.

According to Section 4.2 of the above-named report, chemical substances in drinking water supplies, either natural or treated, should not exceed the concentrations shown in Table A-2.

The suspected relationship of the occurrence of infant methemoglobinemia to the presence of nitrates in the water supply has led to limitation of allowable nitrates in drinking water. The California State Department of Public Health has recommended a tentative limit of 10 ppm nitrate nitrogen (44 ppm nitrates) for domestic water. Any water containing higher concentrations should be considered of questionable suitability for domestic and municipal use.

TABLE A-2

LIMITING CONCENTRATIONS OF MINERAL  
CONSTITUENTS FOR DRINKING WATER

United States Public Health Service  
Drinking Water Standards, 1946

Constituent	: :	Parts per million
<u>Mandatory</u>		
Fluoride (F)		1.5
Lead (Pb)		0.1
Selenium (Se)		0.05
Hexavalent chromium (Cr <sup>+6</sup> )		0.05
Arsenic (As)		0.05
<u>Nonmandatory but Recommended Values</u>		
Iron (Fe) and manganese (Mn) together		0.3
Magnesium (Mg)		125
Chloride (Cl)		250
Sulfate (SO <sub>4</sub> )		250
Copper (Cu)		3.0
Zinc (Zn)		15
Phenolic compounds in terms of phenol		0.001
Total solids - desirable		500
Total solids - permitted		1,000



The California State Board of Public Health recently has defined the maximum safe amounts of fluoride ion in drinking water in relation to mean annual temperature.

<u>Mean annual temperature in °F</u>	<u>Mean monthly maximum fluoride ion concentration in ppm</u>
50	1.5
60	1.0
70 - above	0.7

Limits may be established for other organic or mineral substances if their presence in water renders it hazardous, in the judgment of state or local health authorities.

An additional factor with which water users are concerned is the factor of hardness. Hardness is due principally to calcium and magnesium salts and is generally evidenced by inability to develop suds when using soap. The United States Geological Survey has suggested the following tabulation for degrees of hardness:

TABLE A-3

HARDNESS CLASSIFICATION OF WATERS  
U. S. Geological Survey

<u>Range of hardness</u>	<u>:</u>	<u>Relative</u>
<u>in parts per million</u>	<u>:</u>	<u>classification</u>
0 - 55		Soft
56 - 100		Slightly hard
101 - 200		Moderately hard
Greater than 200		Very hard

While radioactivity criteria for water use is still in a state of development, the maximum concentration, in drinking water, of radioactive contaminants of unknown nature has usually been set at 100  $\mu\text{c}/\text{l}$ .

## Criteria for Irrigation Water

The following criteria for mineral quality of irrigation water have been developed at the University of California at Davis and at the United States Department of Agriculture Regional Salinity Laboratory at Riverside. Because of diverse climatological conditions and variations in crops and soils in California, only general limits of quality for irrigation waters can be suggested. The department uses the three broad classifications of irrigation waters listed in Table A-4.

TABLE A-4

### QUALITATIVE CLASSIFICATION OF IRRIGATION WATERS

	Class 1	Class 2	Class 3
Chemical properties	Excellent to good	Good to injurious	Injurious to unsatisfactory
	(Suitable for most plants under any conditions of soil and climate)	(Possibly harmful to some crops under certain soil conditions)	(Harmful to most crops and unsatisfactory for all but the most tolerant)

#### Total dissolved solids

In ppm	Less than 700	700 - 2,000	More than 2,000
In conductance, $EC \times 10^6$	Less than 1,000	1,000 - 3,000	More than 3,000

#### Chloride ion concentration

In milliequivalents per liter	Less than 5	5 - 10	More than 10
In ppm	Less than 175	175 - 350	More than 350

#### Sodium in percent of base constituents

Less than 60	60 - 75	More than 75
--------------	---------	--------------

#### Boron, in ppm

Less than 0.5	0.5 - 2.0	More than 2.0
---------------	-----------	---------------

## Criteria for Industrial Water

The water quality criteria for the diversified uses of water in industry range from the exacting requirements for make-up water for high pressure boilers to the minimum requirements for water for washdown and metallurgical processing.

Because of the large number of industrial uses of water and widely varied quality requirements, it is practicable to suggest only very broad criteria of quality. These variable conditions make it desirable to consider water quality requirements in broad and general terms only, and where possible, for groups of related industries rather than individually. The general quality requirements of several individual and major groups of water uses are listed in Table A-5. The values shown in this table are those suggested in the progress report of the Committee on Quality of Tolerance of Water for Industrial Uses in the Journal of the New England Water Works Association, Volume 54, 1940.

#### Criteria for Fish and Aquatic Life

Water of suitable quality and quantity is a fundamental requirement for the existence of an abundant supply of fish and aquatic life. It is very important that water quality conditions be such as to maintain an abundant supply of food required by fish and other desirable forms of aquatic life. Streams utilized for the propagation of fish and aquatic life should be free of toxic or harmful concentrations of mineral and organic substances and excessive turbidity. Extensive field and laboratory studies conducted by the United States Fish and Wildlife Service show that, among other things, the water in streams supporting a mixed fauna of warm water fish such as bluegill, bass, crappie, and catfish should have the following properties:

- (a) dissolved oxygen not less than 5 ppm (at least 6 ppm for Salmonoids),
- (b) pH range between 6.5 and 8.5,

TABLE A-5

WATER QUALITY TOLERANCE FOR INDUSTRIAL USES<sup>a</sup>

Allowable limits in parts per million

Use	Turbidity	Color	Hardness as CaCO <sub>3</sub>	Iron <sup>c</sup> as Fe	Manganese as Mn	Total solids	Alkalinity as CaCO <sub>3</sub>	Odor, taste	Hydrogen sulfide	Miscellaneous Requirements	
										Health	Other
Air conditioning	-	-	-	0.5	0.5	-	-	Low	1	-	No corrosiveness, slime formation
Baking	-	10	-	0.2	0.2	-	-	Low	0.2	Potable <sup>b</sup>	
Brewing	-	-	-	-	-	-	-	-	-	-	
Light Beer	10	-	-	0.1	0.1	500	75	Low	0.2	Potable <sup>b</sup>	NaCl less than 275 ppm (pH 6.5-7.0).
Dark Beer	10	-	-	0.1	0.1	1,000	150	Low	0.2	Potable <sup>b</sup>	NaCl less than 275 ppm (pH 7.0 or more)
Canning	-	-	-	-	-	-	-	-	-	-	
Legumes	10	-	25-75	0.2	0.2	-	-	Low	1	Potable <sup>b</sup>	
General	10	-	-	0.2	0.2	-	-	Low	1	Potable <sup>b</sup>	
Carbonated beverages	2	10	250	0.2	0.2	850	50-100	Low	0.2	Potable <sup>b</sup>	
Confectionery	-	-	-	0.2	0.2	100	-	Low	0.2	Potable <sup>b</sup>	Organic color plus oxygen consumed less than 10 ppm.
Cooling	-	-	50	0.5	0.5	-	-	-	5	-	pH above 7.0 for hard candy.
Food: General	10	-	-	0.2	0.2	-	-	Low	-	Potable <sup>b</sup>	No corrosiveness, slime formation.
Ice	-	5	-	0.2	0.2	-	-	Low	-	Potable <sup>b</sup>	
Laundering	-	-	50	0.2	0.2	-	-	-	-	-	SiO <sub>2</sub> less than 10 ppm.
Plastics, clear,	-	-	-	-	-	-	-	-	-	-	
Uncolored	2	2	-	0.02	0.02	200	-	-	-	-	
Paper and pulp:	-	-	-	-	-	-	-	-	-	-	
Groundwood	50	20	180	1.0	0.5	-	-	-	-	-	No grit, corrosiveness.
Draft pulp	25	15	100	0.2	0.1	300	-	-	-	-	
Soda and sulfide	15	10	100	0.1	0.05	200	-	-	-	-	
High-grade	-	-	-	-	-	-	-	-	-	-	
light papers	5	5	50	0.1	0.05	200	-	-	-	-	
Rayon (viscose):	-	-	-	-	-	-	-	-	-	-	
Pulp production	5	5	8	0.05	0.03	100	total 50; hydroxide 8	-	-	-	Al <sub>2</sub> O <sub>3</sub> less than 8 ppm, SiO <sub>2</sub> less than 25 ppm, Cu less than 5 ppm.
Manufacture	-	-	55	0.0	0.0	-	-	-	-	-	pH 7.8 to 8.3
Tanning	0.3	10-100	50-135	0.2	0.2	-	total 135; hydroxide 8	-	-	-	
Textiles: General	5	20	-	0.25	0.25	-	-	-	-	-	
Dyeing	5	5-20	-	0.25	0.25	200	-	-	-	-	Constant composition. Residual alumina less than 0.5 ppm.
Wool scouring	-	-	-	1.0	1.0	-	-	-	-	-	
Cotton bandage	5	5	-	0.2	0.2	-	-	Low	-	-	

a-Moore, E. W., Progress Report of the Committee on Quality Tolerances of Water for Industrial Uses: Journal New England Water Works Association, Volume 54, Page 271, 1940.

b-Potable water, conforming to U. S. P.H.S. standards, is necessary.

c-Limit given applies to both iron alone and the sum of iron and manganese.



(c) ionizable salts, as indicated by conductivity, between 150 and 500 micromhos at 25° Centigrade, and in general not exceeding 1,000 micromhos,

(d) ammonia not exceeding 1.5 ppm.

Mineral salts of high toxicity to fish are those of silver, mercury, copper, zinc, lead, cadmium, nickel, trivalent and hexavalent chromium, and others. Some pairs of toxicants, such as copper and zinc (also copper and cadmium, nickel and zinc) are far more toxic when combined than when they occur individually. Other toxic substances, when combined, neutralize each other through antagonism or chemical reaction (e.g., free cyanide combines with toxic heavy metal cations, such as nickel and copper ions, to form relatively harmless metallocyanide complexes).

The increasing use of household and industrial detergents, as well as the expansion in the manufacture and use of agriculture insecticides, poses serious hazards to fish and aquatic life. Preliminary studies, for example, indicate that one of the most common household detergents is lethal to relatively hardy fish at very low concentrations. This detergent was lethal to fish in fresh water at concentrations below 0.1 ppm and below 0.005 ppm in salt water. The increase in toxicity in salt water can probably be attributed to the fact that marine fishes must ingest water to maintain their osmotic balance.

Development and use of water resources, including the construction of dams for storage of water, frequently affects water temperature which in turn affects fish and other aquatic life. Optimum water temperature for cold water fish, such as trout and salmon, normally lie between 32° and 65° Fahrenheit. The cold water species are generally intolerant to temperatures above 75° Fahrenheit and will seek the lower temperature



where possible. Warm water fish such as minnows, carp, catfish, perch, sunfish, and bass normally live in water having temperatures ranging from near 32° to 86° Fahrenheit. Acclimation enables certain warm water species to live in water having temperatures as high as 90° Fahrenheit, although they will migrate, where possible, to waters below 86° Fahrenheit.

A P P E N D I X    B

BASIC DATA



# TABLE OF CONTENTS

<u>Table number</u>		<u>Page</u>
	<u>Sampling Station Data</u>	
B-1	North Coastal Region (No. 1) . . . . .	B-9
B-2	San Francisco Bay Region (No. 2) . . . . .	B-11
B-3	Central Coastal Region (No. 3) . . . . .	B-13
B-4	Los Angeles Region (No. 4) . . . . .	B-15
B-5	Central Valley Region (No. 5) . . . . .	B-19
B-6	Lahontan Region (No. 6) . . . . .	B-33
B-7	Colorado River Basin Region (No. 7) . . . . .	B-35
B-8	Santa Ana Region (No. 8) . . . . .	B-37
B-9	San Diego Region (No. 9) . . . . .	B-39
	<u>Analyses of Surface Waters</u>	
B-10	North Coastal Region (No. 1) . . . . .	B-41
B-11	San Francisco Bay Region (No. 2) . . . . .	B-57
B-12	Central Coastal Region (No. 3) . . . . .	B-63
B-13	Los Angeles Region (No. 4) . . . . .	B-71
B-14	Central Valley Region (No. 5) . . . . .	B-89
B-15	Lahontan Region (No. 6) . . . . .	B-213
B-16	Colorado River Basin Region (No. 7) . . . . .	B-221
B-17	Santa Ana Region (No. 8) . . . . .	B-235
B-18	San Diego Region (No. 9) . . . . .	B-243

Table  
number

Page

Radioassay of Surface Waters

B-19	North Coastal Region (No. 1) . . . . .	B-251
B-20	San Francisco Bay Region (No. 2) . . . . .	B-253
B-21	Central Coastal Region (No. 3) . . . . .	B-255
B-22	Los Angeles Region (No. 4) . . . . .	B-257
B-23	Central Valley Region (No. 5) . . . . .	B-259
B-24	Lahontan Region (No. 6) . . . . .	B-265
B-25	Colorado River Basin Region (No. 7) . . . . .	B-267
B-26	Santa Ana Region (No. 8) . . . . .	B-269
B-27	San Diego Region (No. 9) . . . . .	B-271

PLATES

Plate  
number

North Coastal Region (No. 1)

B-1	Quality Characteristics of Eel River near McCann and Eel River at Scotia . . . . .	B-273
B-2	Quality Characteristics of Eel River, South Fork near Miranda and Klamath River near Copco . . . . .	B-274
B-3	Quality Characteristics of Klamath River near Klamath and Klamath River at Somesbar . . . . .	B-275
B-4	Quality Characteristics of Russian River at Guerneville and Russian River near Healdsburg . . . . .	B-276
B-5	Quality Characteristics of Russian River near Hopland and Russian River near Ukiah . . . . .	B-277
B-6	Quality Characteristics of Russian River, East Fork near Calpella and Russian River, East Fork at Potter Valley Powerhouse . . . . .	B-278
B-7	Quality Characteristics of Smith River near Crescent City and Trinity River near Hoopa . . . . .	B-279
B-8	Quality Characteristics of Trinity River at Lewiston . . .	B-280



San Francisco Bay Region (No. 2)

B-9	Quality Characteristics of Alameda Creek near Niles and Coyote Creek near Madrone . . . . .	B-281
B-10	Quality Characteristics of Los Gatos Creek at Los Gatos and Napa River near St. Helena . . . . .	B-282

Central Coastal Region (No. 3)

B-11	Quality Characteristics of Carmel River near Carmel and Pajaro River near Chittenden . . . . .	B-283
B-12	Quality Characteristics of Salinas River at Paso Robles and San Lorenzo River at Big Trees . . . . .	B-284
B-13	Quality Characteristics of Santa Ynez River below Los Laureles Canyon and Santa Ynez River at Solvang . . . . .	B-285
B-14	Quality Characteristics of Soquel Creek at Soquel and Uvas Creek near Morgan Hill . . . . .	B-286

Los Angeles Region (No. 4)

B-15	Quality Characteristics of Matilija Creek above Matilija Dam and Metropolitan Water District Aqueduct at LaVerne . . . . .	B-287
B-16	Quality Characteristics of Mission Creek at Whittier Narrows and Mono-Owens Aqueduct near San Fernando . . . . .	B-288
B-17	Quality Characteristics of Rio Hondo at Whittier Narrows and San Gabriel River at Whittier Narrows . . . . .	B-289
B-18	Quality Characteristics of Santa Clara River at Los Angeles-Ventura County Line and Santa Clara River near Santa Paula . . . . .	B-290
B-19	Quality Characteristics of Ventura River near Ventura . . . . .	B-291

Central Valley Region (No. 5)

B-20	Quality Characteristics of American River at Sacramento and Bear Creek near Stevinson . . . . .	B-293
B-21	Quality Characteristics of Bear River near Wheatland and Big Chico Creek near Chico . . . . .	B-294
B-22	Quality Characteristics of Burney Creek near Burney and Butte Creek near Chico . . . . .	B-295
B-23	Quality Characteristics of Cache Creek near Capay and Cache Creek near Lower Lake . . . . .	B-296
B-24	Quality Characteristics of Cache Creek, North Fork near Lower Lake and Calaveras River near Jenny Lind . . . . .	B-297
B-25	Quality Characteristics of Clear Lake near Clearlake Oaks and Clear Lake at Lakeport . . . . .	B-298
B-26	Quality Characteristics of Colusa Trough near Colusa and Cosumnes River near Michigan Bar . . . . .	B-299
B-27	Quality Characteristics of Cottonwood Creek near Cottonwood and Deer Creek near Vina . . . . .	B-300
B-28	Quality Characteristics of Delta Cross Channel near Walnut Grove and Delta-Mendota Canal near Mendota . . . . .	B-301
B-29	Quality Characteristics of Delta-Mendota Canal near Tracy and Feather River at Nicolaus . . . . .	B-302
B-30	Quality Characteristics of Feather River near Oroville and Indian Creek near Crescent Mills . . . . .	B-303
B-31	Quality Characteristics of Indian Slough near Brentwood and Italian Slough near Mouth . . . . .	B-304
B-32	Quality Characteristics of Kaweah River near Three Rivers and Kern River near Bakersfield . . . . .	B-305
B-33	Quality Characteristics of Kings River below North Fork and Kings River below Peoples Weir . . . . .	B-306
B-34	Quality Characteristics of Lindsey Slough near Rio Vista and Little Potato Slough at Terminous . . . . .	B-307

Central Valley Region (No. 5) (cont.)

B-35	Quality Characteristics of McCloud River above Shasta Lake and Merced River below Exchequer Dam . . . . .	B-308
B-36	Quality Characteristics of Merced River near Stevinson and Mill Creek near Los Molinos . . . . .	B-309
B-37	Quality Characteristics of Mokelumne River near Lancha Plana and Mokelumne River at Woodbridge . . . . .	B-310
B-38	Quality Characteristics of Old River at Clifton Court Ferry and Old River at Orwood Bridge . . . . .	B-311
B-39	Quality Characteristics of Old River near Tracy and Pit River near Canby . . . . .	B-312
B-40	Quality Characteristics of Pit River near Montgomery Creek and Putah Creek near Winters . . . . .	B-313
B-41	Quality Characteristics of Rock Slough near Knightsen and Sacramento River at Delta . . . . .	B-314
B-42	Quality Characteristics of Sacramento River near Hamilton City and Sacramento River at Keswick . . . . .	B-315
B-43	Quality Characteristics of Sacramento River at Knights Landing and Sacramento River near Redding . . . . .	B-316
B-44	Quality Characteristics of Sacramento River at Rio Vista and Sacramento River at Sacramento . . . . .	B-317
B-45	Quality Characteristics of Sacramento River at Snodgrass Slough and Sacramento Slough near Knights Landing . . . . .	B-318
B-46	Quality Characteristics of San Joaquin River at Antioch and San Joaquin River near Dos Palos . . . . .	B-319
B-47	Quality Characteristics of San Joaquin River at Friant and San Joaquin River at Garwood Bridge . . . . .	B-320
B-48	Quality Characteristics of San Joaquin River near Grayson and San Joaquin River at Maze Road Bridge . . . . .	B-321
B-49	Quality Characteristics of San Joaquin River near Mendota and San Joaquin River at Mossdale Bridge . . . . .	B-322

Central Valley Region (No. 5) (cont.)

B-50	Quality Characteristics of San Joaquin River near Vernalis and South Honcut Creek near Bangor . . . .	B-323
B-51	Quality Characteristics of Stanislaus River near Mouth and Stockton Ship Channel at Rindge Island . . . .	B-324
B-52	Quality Characteristics of Stony Creek near Hamilton City and Tule River near Porterville . . . . .	B-325
B-53	Quality Characteristics of Tuolumne River below Don Pedro Dam and Tuolumne River at Hickman- Waterford Bridge . . . . .	B-326
B-54	Quality Characteristics of Tuolumne River at Tuolumne City and Yuba River at Marysville . . . . .	B-327
B-55	Quality Characteristics of Yuba River at Smartville . . .	B-328

Lahontan Region (No. 6)

B-56	Quality Characteristics of Lake Tahoe at Bijou and Lake Tahoe at Tahoe City . . . . .	B-329
B-57	Quality Characteristics of Lake Tahoe at Tahoe Vista and Mojave River near Victorville . . . . .	B-330
B-58	Quality Characteristics of Susan River at Susanville and Truckee River near Farad . . . . .	B-331
B-59	Quality Characteristics of Truckee River near Truckee . . . . .	B-332

Colorado River Basin Region (No. 7)

B-60	Quality Characteristics of Alamo River near Calapatria and Alamo River at International Boundary . . . . .	B-333
B-61	Quality Characteristics of New River at International Boundary and New River at Westmorland . . . . .	B-334
B-62	Quality Characteristics of Whitewater River at Whitewater . . . . .	B-335

Santa Ana Region (No. 8)

B-63	Quality Characteristics of Chino Creek near Chino and Santa Ana River near Mentone . . . . .	B-337
B-64	Quality Characteristics of Santa Ana River near Prado Dam and Santa Ana River at Riverside . . . . .	B-338
B-65	Quality Characteristics of Warm Creek at Colton and Warm Creek at San Bernardino . . . . .	B-339

San Diego Region (No. 9)

B-66	Quality Characteristics of Escondido Creek near Harmony Grove and San Diego River at Old Mission Dam . . . . .	B-341
B-67	Quality Characteristics of San Luis Rey River near Pala and Santa Margarita River near Fallbrook . . .	B-342





TABLE B-1  
SAMPLING STATION DATA  
NORTH COASTAL REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By a	Analysis on Page	
						Mineral	Radioassay
Eel River near McCann	5	2S/3E-3	1	Bridge 1 mile northwest of McCann	BSE	B-41	B-251
Eel River at Scotia	6	1N/1E-7	1	Left bank below U.S. Highway 101 Bridge between Scotia and Rio Dell.	BSE	B-42	B-251
Eel River, South Fork near Miranda	7	3S/4E-30	1	Right bank below Gage, 6 miles South of Miranda at Sylvandale Camp Grounds on U.S. Highway 101 and 0.9 mile south of Rocky Glen Creek	BSE	B-43	B-251
Klamath River near Copco	1	48N/5W-36	1	Right bank at USGS gaging station one mile south of Copco Post Office, 0.5 mile downstream from Copco No. 2 plant of the California-Oregon Power Company and 500 feet downstream from Fall Creek.	F & G	B-44	B-251
Klamath River near Klamath	3	13N/2E-17	1	Right bank at USGS gage located 5.7 miles upstream from town of Klamath	BSE	B-45	B-251
Klamath River at Somesbar	2	11N/6E-4	1	Left bank 100 feet downstream from gage, 1 mile west of Somesbar Post Office and 300 feet downstream from Salmon River.	BSE	B-46	B-251
Russian River at Guerneville	10	8N/10W-32	1	Right bank below highway bridge in Guerneville, 6.5 miles upstream from Austin Creek.	BSE	B-47	B-251
Russian River near Healdsburg	9	9N/9W-22	1	Left bank below gage, 2 miles east of Healdsburg and 3.5 miles upstream from Dry Creek.	BSE	B-48	B-251

TABLE B-1  
SAMPLING STATION DATA  
NORTH COASTAL REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Russian River near Hopland	8a	14N/12W-36	1	Right bank below gage at abandoned bridge 0.6 mile off U.S. Highway 101 on Largo Road and 3.8 mi. north of Hopland	BSE	B-49	B-251
Russian River near Ukiah	10b	15N/12W-28	1	Left bank upstream from Talmadge Road Bridge about 1 mile south-east of Ukiah.	BSE	B-50	B-251
Russian River, East Fork near Calpella	8	16N/12W-13	1	Left bank about 0.2 mile downstream from gage. Gage located on right bank, 5.1 miles east of U.S. Highway 101 on State Route No. 20	BSE	B-51	B-251
Russian River, East Fork at Potter Valley Power-house.	10a	17N/11W-6	1	Tailrace of PG&E Powerhouse, 3 miles northeast of town of Potter Valley.	BSE	B-52	B-251
Smith River near Crescent City	3a	16N/1E-10	1	From left bank below gage, 8 miles east of Crescent City and 0.5 mile downstream from South Fork.	BSE	B-53	B-252
Trinity River near Hoopa	4	EN/5E-31	1	From left bank near gage located 2 miles southeast of Hoopa and 0.5 mile downstream from Campbell Creek on Hoopa Indian Reservation and on property of Sugar Pine Lumber Company	BSE	B-54	B-252
Trinity River at Lewiston	4a	33N/8W-19	1	From left bank below gage at Highway Bridge at Lewiston, 0.8 mile downstream from Deadwood Creek.	BSE	B-55	B-252

TABLE B-2  
SAMPLING STATION DATA  
SAN FRANCISCO BAY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By	Analysis on Page	
						Mineral	Radioassay
Alameda Creek near Niles	73	4S/1W-15	2	Right bank at Concrete Control near gage located 0.2 mile downstream from Railroad Bridge and 1.2 miles northeast of Niles.	DWR	B-57	B-253
Carquinez Straits at Martinez	28a	2N/3W-13	2	East end of Carquinez Strait, South Shore, 1.0 mile west of Southern Pacific Co., railroad bridge at Municipal Ferry Slip.	USER	B-58	
Coyote Creek near Madrone	82	9S/3E-9	2	Right bank at Gage 0.2 mile downstream from County Road Bridge and 2.8 miles northeast of Madrone	DWR	B-59	B-253
Los Gatos Creek at Los Gatos	74	8S/1W-29	2	From left bank at foot of gage about 0.75 mile upstream from Los Gatos and 0.25 mile downstream from Lexington Dam.	DWR	B-60	B-253
Napa River near St. Helena	72	8N/5W-33	2	At bridge which is located 1.3 miles northeast of Highway 128 on Zinfandel Lane and 2.5 miles east of St. Helena. Gage located 0.2 mile upstream from Bridge.	DWR	B-61	B-253





TABLE B-3  
SAMPLING STATION DATA  
CENTRAL COASTAL REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Carmel River near Carmel	83	16S/1E-17	3	Right bank about 30 feet below Rancho San Carlos Bridge about 3 miles east of Carmel.	DWR	B-63	B-255
Pajaro River near Chittenden	77	12S/3E-12	3	Right bank at Highway Bridge on Chittenden Road at Santa Cruz-San Benito County line 1 mile southeast of Chittenden and 2.5 miles downstream from San Benito River.	DWR	B-64	B-255
Salinas River at Paso Robles	43a	26S/12E-28	3	From left bank just upstream from USGS gage on State Highway 41 Bridge at Paso Robles, 3.5 mile upstream from Huerfano Creek.	BSE	B-65	B-255
San Lorenzo River at Big Trees (near Felton)	75	10S/2W-26	3	At Sequoia Gardens Resort on right bank 1.7 miles south of Felton, West of State Highway 9. Gage 0.8 mile downstream from sampling point.	DWR	B-66	B-255
Santa Ynez River below Los Laureles Canyon	45	5N/28W-6	3	From left bank at USGS gage located 0.1 mile downstream from Los Laureles Canyon and 13 miles east of Santa Ynez.	BSE	B-67	B-255
Santa Ynez River at Solvang	45a	6N/31W-22	3	From right bank near USGS gage at Mission Bridge 25 feet downstream from Alisal Creek and 0.9 mile south of Solvang.	BSE	B-68	B-255
Soquel Creek at Soquel	76	11S/1W-10	3	From left bank at foot of gage, 0.25 mile upstream from bridge on Old Santa Cruz Highway.	DWR	B-69	B-255

TABLE B-3  
SAMPLING STATION DATA  
CENTRAL COASTAL REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By a	Analysis on Page	
						Mineral	Radioassay
Uvas Creek near Morgan Hill	96	10S/3E-18	3	At discharge pipe below Uvas Dam 0.6 mile downstream from Eastman Canyon and 4.8 miles southwest of Morgan Hill.	DMR	B-70	B-255

TABLE B-4  
SAMPLING STATION DATA  
LOS ANGELES REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Los Angeles River at Long Beach	48	4S/13W-26	4	Highway 101 (State Street) Bridge, sampled from left bank just downstream from bridge.	LAPH DWR-LA	B-71	B-257
Los Angeles River at Los Angeles	47	1S/13W-21	4	USGS and LACFCD gaging station at Figueroa Street Bridge, 0.1 mile upstream from Arroyo Seco Confluence.	LAPH DWR-LA	B-72	B-257
Matilija Creek above Matilija Dam	45b	5N/23W-19	4	Left bank at USGS gaging station 1.7 miles northwest of Matilija and 2 miles upstream from Matilija Dam.	BCE	B-73	B-257
Metropolitan Water District Aqueduct at La Verne	69	1S/9W-6	4	Raw water inflow to Metropolitan water district treatment plant (monthly composite sample).	MWD	B-74	
Mission Creek at Whittier Narrows	49a	2S/11W-6	4	2 miles northeast of Montebello at LACFCD gaging station 200 yards upstream from San Gabriel Blvd. Bridge. Sampled from right bank at gage.	DWR-LA	B-75	B-257
Mono-Owens Aqueduct near San Fernando	70	3N/15W-30	4	At inlet to upper San Fernando Reservoir	IADW&P	B-76	
Piru Creek near Piru	46c	4N/18W-20	4	Right bank just downstream from railroad bridge at Piru.	DWR-LA	B-77	B-257
Rio Hondo at Whittier Narrows	49	2S/11W-6	4	Right bank, 125 yards upstream from San Gabriel Blvd. Bridge. Sampled at LACFCD gaging station.	DWR-LA	B-78	B-257

TABLE B-4  
SAMPLING STATION DATA  
LOS ANGELES REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
San Gabriel River at Azusa Powerhouse	50d	1N/10W-22	4	From power plant at Tailrace of the Azusa power plant.	DWR-LA	B-79	B-257
San Gabriel River near Azusa	50a	1N/10W-13	4	At USGS gaging station 3 miles Northeast of Azusa, 1 mile below Morris Dam. Sampled from right bank at Gage.	DWR-LA	B-80	
San Gabriel River at Whit-tier Narrows	50	2S/11W-5	4	From right bank 200 feet beyond end of San Gabriel Blvd. extended (Syphon Road) upstream from Whit-tier Narrows Dam.	DWR-LA	B-81	B-257
Santa Clara River at Blue Cut	46b	4N/18W-25	4	1 mile downstream from Station 46 at Tapo Canyon pipe and road crossing and 0.5 mile downstream from Ventura County gaging station. Sampled downstream from road culvert.	DWR-LA	B-82	B-257
Santa Clara River at Los Angeles-Ventura County line	46	4N/17W-19	4	0.5 mile west of Los Angeles-Ventura County Line and 0.5 mile upstream from Ventura county gage. Sampled from left bank at Newhall Ranch road crossing.	DWR-LA	B-83	B-257
Santa Clara River near Santa Paula	46a	3N/21W-12	4	Station located 1.5 miles upstream from Santa Paula Bridge (Willard Bridge) and 100 feet north of South Mountain Road. Sampled from left bank.	DWR-LA	B-84	B-257
Santa Paula Creek near Santa Paula	46e	4N/21W-27	4	From right bank at USGS gage near Santa Paula	DWR-LA	B-85	B-257

TABLE B-4  
SAMPLING STATION DATA  
LOS ANGELES REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By a	Analysis on Page	
						Mineral	Radioassay
Sespe Creek near Fillmore	46d	4N/20W-12	4	From left bank during low flow and from right bank at USGS gage during high flow.	DWR-LA	B-86	B-257
Ventura River near Ventura	61	3N/23W-8	4	Station located at USGS gage in Foster Memorial Park on right bank, 5 miles north of Ventura, 300 feet downstream from Highway 150 bridge.	DWR-LA	B-87	B-257





TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
American River at Fair Oaks	22d	9N/6E-13	5	At Old Fair Oaks Bridge, gage located on right bank just upstream from old Highway Bridge.	USGS	B-89	
American River below Nimbus Dam	22a	9N/7E-16	5	Downstream from Nimbus Dam	USBR	B-91	
American River at Sacramento	22	8N/5E-3	5	At "H" Street Bridge, Waterstage recorder located on left bank on upstream side of bridge.	DWR	B-92	B-259
Bear Creek near Stevinson	111	7S/10E-36	5	Right bank 4.5 miles southeast of Stevinson at washed out wooden bridge.	DWR	B-93	
Bear River near Wheatland	78	13N/5E-3	5	Left bank, 30 feet downstream from gage located on downstream side of bridge on U.S. Highway 99E 1 mile southeast of Wheatland.	DWR	B-94	B-259
Big Chico Creek near Chico	85	22N/2E-9	5	Right bank at gage located approximately three miles upstream from golf course clubhouse in Bidwell Park and 6 miles northeast of Chico.	DWR	B-95	
Burney Creek near Burney	17c	35N/3E-18	5	Timber Bridge on Jack Rabbit Flat Road, about 1.0 mile west of Burney on Highway 299, then about 0.2 mile south of highway 299 on Jack Rabbit Flat Road.	DWR	B-96	B-259
Butte Creek near Chico	84	22N/2E-36	5	Right bank at foot of gage 0.8 mile downstream from Little Butte Creek and 7.5 miles east of Chico	DWR	B-97	

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Cache Creek near Capay	80	10N/2W-8	5	Right bank at gage located 3 miles northwest of Capay and 2 miles upstream from Clear Lake Water Co. Diversi on Dam.	DWR	B-98	B-259
Cache Creek near Lower Lake	42	12N/6W-6	5	Left bank at foot of gage about 500 feet downstream from dam and about 2.5 miles southeast of State Highway 53.	DWR	B-99	B-259
Cache Creek, North Fork near Lower Lake	79	14N/6W-31	5	Bridge on State Highway 20 between Williams and Clear Lake. Gage located on right bank 2.7 miles northwest of bridge.	DWR	B-100	B-259
Cache Slough below Lindsey Slough	110a	5N/3E-31	5	At Liberty Island Ferry just downstream from confluence of Cache Slough and Lindsey Slough.	USER	B-101	
Calaveras River near Jenny Lind	16a	3N/10E-27	5	From right bank about 150 feet downstream from USGS gage located 70 feet below bridge on Milton Road, 0.2 mile south of Jenny Lind	DWR	B-102	B-259
Clear Lake near Clearlake Oaks	40	14N/8W-27	5	At Gordy's Fish Harbor Motel at Glen Haven 3.6 miles northwest of Clearlake Oaks.	DWR	B-103	B-259
Clear Lake at Lakeport	41	14N/10W-24	5	End of pier at foot of 3rd St. at north end of park. Staff gage located on piling at end of pier.	DWR	B-104	B-259
Colusa Trough near Colusa	87	16N/2W-34	5	At Colusa-Williams highway bridge 3 miles west of Colusa. Water-stage recorder on upstream side of bridge.	DWR	B-105	

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By a	Analysis on Page	
						Mineral	Radioassay
Contra Costa Canal at First Pump Lift	109a	2N/2E-25	5	At pumping plant No. 1, 0.7 mile east of Oakley and 2.6 miles northeast of Knightsen.	USBR	B-106	
Consumnes River near Michigan Bar	94	8N/8E-36	5	At Michigan Bar road bridge about 1 mile north of Michigan Bar.	DWR	B-107	
Cottonwood Creek near Cottonwood	12b	29N/3W-7	5	Right bank at gage house located 2 miles east of Cottonwood.	DWR	B-108	B-259
Deer Creek near Vina	95	24N/2W-14	5	Left bank under U.S. Highway 99E Bridge 1 mile north of Vina. DWR Gage located approximately 400' downstream from U.S. Highway 99E bridge on left bank.	DWR	B-109	
Delta Cross Channel near Walnut Grove	98	5N/4E-35	5	Sampled from river side of gate structure when gates are open and from highway bridge when gates are closed.	DWR	B-110	
Delta-Mendota Canal near Mendota	92	13S/15E-19	5	Right bank 1 mile upstream from canal gates and 2 miles north of Mendota on Bass Road.	DWR	B-111	B-259
Delta-Mendota Canal near Tracy	93	1S/4E-30	5	Left bank downstream from Byron-Bethany Road cross-over, about 1 mile upstream from Tracy pumping plant, about 10 miles northwest of Tracy.	DWR	B-112	
Dutch Slough at Farrar Park Bridge	108b	2N/3E-22	5	From Farrar Park Bridge on Bethel Island Road.	USBR	B-116	

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
False River at Webb Pump	112a	3N/3E-36	5	At Junction with Fisherman's Cut	USBR	B-117	
Feather River at Nicolaus	20	12N/3E-12	5	Left bank at gage located 0.5 miles downstream from highway bridge at Nicolaus.	DWR USGS	B-118	B-260
Feather River near Oroville	19	19N/4E-2	5	Left bank at gage located 75 feet upstream from bridge on Feather River Highway (State Hwy. 24), two miles downstream from confluence of North and Middle Forks and 4 miles northeast of Oroville.	DWR	B-122	B-260
Indian Creek near Crescent Mills	17d	26N/9E-25	5	At bridge about 1 mile above gage which is located 0.8 mile upstream from Dixie Creek and 1.5 miles south of town of Crescent Mills.	DWR	B-123	B-260
Indian Slough near Brentwood	107	1N/3E-22	5	At east Contra Costa Irrigation District Canal at the District's Pump No. 1 on Bixler Road at the head of Indian Slough, 3 miles north of Byron.	DWR	B-124	
Italian Slough near mouth	106	1S/4E-7	5	From boat landing on right bank at confluence of slough and old river about 3 miles southeast of Byron.	DWR	B-125	
Kaweah River near Three Rivers	35	17S/28E-33	5	Left bank at gage located 2.5 miles downstream from South Fork and 3 miles southwest of Three Rivers on Highway 198. Approximately 0.5 miles past Cobbles Lodge.	DWR	B-126	B-260



TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Kern River near Bakersfield	36	29S/28E-2	5	From Diversion Weir located at mouth of Lower Canyon 5 miles northeast of Bakersfield.	DWR	B-127	B-260
Kern River below Isabella Dam	36a	26S/33E-19	5	Right bank, 500 feet downstream from outfall tunnel.	C of E	B-128	B-260
Kern River near Kernville	36b	23S/32E-14	5	At gage 3 miles upstream from Salmon Creek and 15 miles north of Kernville.	C of E	B-129	B-260
Kings River below North Fork	33c	12S/26E-21	5	From bridge at midstream 0.8 mile downstream from North Fork.	C of E	B-130	B-260
Kings River below Peoples Weir (near Kingsburg)	34	17S/22E-1	5	At gage on left bank about 0.25 mile downstream from Diversion Weir, 2 miles south of Kingsburg and 12 miles northeast of Hanford.	DWR	B-131	B-260
Kings River below Pine Flat Dam	33b	13S/24E-2	5	Left bank, 3000 feet downstream from the dam.	C of E	B-132	B-260
Lindsey Slough near Rio Vista	110	5N/2E-25	5	From boat landing near gage located at Montezuma Ranch, Headquarters of California Packing Corporation, 6 miles north of Rio Vista.	DWR	B-133	
Little Potato Slough at Terminus	99	3N/4E-13	5	From boat dock on east bank approximately 250 feet north of State Highway 12 bridge.	DWR	B-134	

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By	Analysis on Page	
						Mineral	Radioassay
McCloud River above Shasta Lake	18	36N/3W-28	5	Left bank below gage located just upstream from Shasta Lake 0.3 mile downstream from Bollibokka Creek and 11 miles east of Delta. Stream confined in a steep rocky canyon. Station inaccessible by road. One and one-half hour walk to station.	BSE	B-135	B-260
Merced River below Exchequer Dam	32a	4S/15E-14	5	Right bank at foot of gage located at Exchequer, 0.5 mile downstream from Lake McClure and 5 miles northeast of Merced Falls.	DWR	B-136	B-260
Merced River near Stevinson	32	6S/9E-36	5	From right bank approximately 100 feet upstream from gage. Gage located 6 miles northwest of Stevinson.	DWR	B-137	B-260
Mill Creek near Los Molinos	88	25N/2W-9	5	Right bank below Highway 99E Bridge, 1.5 mile north of Los Molinos. Gage located downstream from bridge.	DWR	B-138	
Mokelumne River below Consumnes River	23b	5N/5E-29	5	From bridge, approximately 2.5 miles north of Thornton on Thornton-Franklin Road.	USBR	B-139	
Mokelumne River below Georgiana Slough	23c	3N/4E-7	5	From Highway 12 bridge approximately 5 miles west of Terminus	USBR	B-140	
Mokelumne River near Lancha Plana	23a	4N/10E-4	5	Left bank near Gage, located 1 mile east of Lancha Plana, 3 miles downstream from Pardee Dam and 5 mi. upstream from Camanche Creek.	DWR	B-141	B-261

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Mokelumne River at Wood-bridge	23	4N/6E-34	5	Left bank at foot of gage house located 0.4 mile downstream from dam and canal intake of Woodbridge Irrigation District.	DWR USGS	B-142	B-261
Old River at Clifton Court Ferry	104	1S/4E-20	5	From Ferry at left bank about 10 miles northwest of Tracy and 6 miles southeast of Byron. Gage located on left bank 0.3 mile upstream from Ferry.	DWR	B-146	
Old River at Holland Tract	108a	2N/4E-19	5	Approximately 1 mile north of confluence of Old River and Rock Slough.	USBR	B-147	
Old River at Mandeville Island	112	2N/4E-6	5	Right bank at Northwest side of Mandeville Island. Gage located on northeast side of Bacon Island	DWR	B-148	
Old River at Orwood Bridge	10E	1N/4E-17	5	Boat dock on right bank at Atchison-Topeka & Santa Fe Railroad Bridge about 6 miles northeast of Byron.	DWR	B-149	B-261
Old River near Tracy	103	2S/5E-6	5	Left bank at trash rack of Naglee-Burk pump intake at end of Lammers Road and about 5 miles Northwest of Tracy.	DWR	B-150	
Pit River near Canby	17a	41N/9E-10	5	About 500 feet downstream from bridge on U.S.Hwy 299 located about 4.5 mi. southwest of Canby. Water state recorder located on right bank 0.5 mile upstream from bridge.	DWR	B-151	B-261

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Pit River near Montgomery Creek	17	35N/1W-32	5	Right bank about 125 feet upstream from gage, located 1 mile upstream from Cow Canyon Creek and 3.5 mile west of town of Montgomery Creek.	BSE	B-152	B-261
Putah Creek near Winters	81	8N/2W-28	5	Left bank 50 feet below gage located 8.2 miles west of Winters on State Highway 128.	DWR	B-153	B-261
Rock Slough near Knightsen	109	2N/3E-34	5	Tule Lane Bridge at head of slough 300 feet south of gates of Contra Costa Canal intake and two miles northeast of Knightsen.	DWR	B-154	B-261
Sacramento River at Bend	12c	28N/3W-20	5	At Bend highway bridge	USGS- WPCB#5 Coop.	B-155	
Sacramento River at Butte City	87a	19N/1W-32	5	On left bank 0.5 mile south of Butte City.	USGS- WPCB#5 Coop.	B-158	
Sacramento River at Delta	11	36N/5W-35	5	Right bank 50 feet upstream from gage, located 0.2 mile downstream from Dog Creek and 0.6 mile south-east of Delta.	BSE	B-161	B-261
Sacramento River near Hamilton City	13	22N/1W-20	5	At Gianella Bridge on State Hwy #32 between Hamilton City and Chico. Sampled from each channel from bridge (composite of two samples). Gage on left bank on downstream side of bridge.	DWR	B-162	B-261



TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Sacramento River at Keswick	12	32N/5W-28	5	From left bank about 100 feet upstream from gage located 0.6 mile downstream from Keswick Dam, 0.6 mile upstream from Middle Creek, 1.5 mile downstream from Keswick and 10 miles downstream from Shasta Dam.	BSE	B-163	B-261
Sacramento River at Knights Landing	14	11N/2E-14	5	From state highway #24 bridge. Water stage recorder 0.3 mile downstream from bridge. Composite of two samples.	DWR USGS	B-164	B-261
Sacramento River near Redding	12a	31N/4W-18	5	From right bank about 500 feet downstream from gage located below Anderson-Cottonwood Diversion Dam.	PSE	B-168	B-261
Sacramento River at Rio Vista	16	4N/3E-31	5	From right bank at pier at upstream side of U.S. Department of Army Installation located about 11 mile downstream from Rio Vista. Tidal gage, located near Administration Bldg. about 1,500 feet downstream from sampling point.	DWR	B-169	B-262
Sacramento River at Sacramento	15	9N/4E-35	5	From U.S. Highway 40 bridge (Tower Bridge) water stage recorder located on left bank 0.3 mile upstream from bridge. Composite of three samples.	DWR USGS- WPCB#5 Coop.	B-170	B-262
Sacramento River at Snodgrass Slough	97	6N/4E-27	5	At gage on left bank, 2 miles north of Courtland.	DWR	B-174	



TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By	Analysis on Page	
						Mineral	Radioassay
Sacramento River at Toland Landing	15a	3N/2E-21	5	Approximately 6 miles downstream from Rio Vista, opposite from Emmanton.	USBR	B-175	
Sacramento Slough near Knights Landing	14a	11N/3E-20	5	From pond near discharge pipes below gage located on levee near Reclamation District 1500 pumping plant.	DWR	B-176	B-262
Salt Slough at San Luis Ranch	92a	9S/11E-7	5	At gage on left bank on downstream side of bridge at San Luis Ranch, 7 miles north of Los Banos.	USBR	B-177	
San Joaquin River at Antioch	28	2N/2E-18	5	From pier at old Antioch water works on Fulton Shipyard Road. Tidal gage located in house at end of pier.	DWR	B-178	B-262
San Joaquin River near Biola	24a	13S/17E-2	5	On right bank 1.9 miles downstream from Skaggs Bridge, 4.2 miles northwest of Biola.	USGS	B-179	
San Joaquin River at Brandt Bridge	101a	1S/6E-9	5	From bridge approximately 5 miles upstream from Garwood Bridge on State Highway No. 4-gage on right bank.	USBR	B-181	
San Joaquin River at Crows Landing Bridge	26b	6S/9E-7	5	From bridge 3.5 miles north east of Crows Landing on Crows Landing Road.	USBR	B-182	
San Joaquin River near Dos Palos	25a	11S/13E-12	5	From bridge at head of Temple Slough 6.3 miles east of Dos Palos. Gage located 0.7 mile downstream.	DWR	B-183	B-262

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By	Analysis on Page	
						Mineral	Radioassay
San Joaquin River at Fremont Ford Bridge	25c	7S/9E-24	5	On left bank 150 feet downstream from Fremont Ford Bridge, Merced County, 2.1 miles downstream from Salt Slough, 4.5 miles west of Stevinson, and 6.7 miles upstream from Merced River.	USGS	B-184	
San Joaquin River at Friant	24	11S/21E-7	5	From left bank 100 feet downstream from gage house located 0.5 mile west of Friant and 2 miles downstream from Friant Dam.	DWR	B-187	B-262
San Joaquin River at Garwood Bridge	101	1N/6E-16	5	From boat landing on left bank near upstream side of bridge on Stockton-Pyron Road. Gage located on right bank on Brandts Bridge 5 miles upstream from Garwood Bridge.	DWR	B-188	
San Joaquin River near Grayson	26	4S/7E-24	5	From Laird Slough Bridge. Water stage recorder located on bridge near left bank.	DWR	B-189	B-262
San Joaquin River at Hills Ferry Bridge	25b	7S/9E-3	5	At Hills Ferry Bridge, 3.9 miles northeast of Newman.	USBR	B-190	
San Joaquin River at Jersey Point	28b	2N/3E-6	5	Left bank, one mile below mouth of False River.	USBR	B-191	
San Joaquin River at Maze Road Bridge	26a	3S/7E-29	5	From boat dock on left bank, 300 feet upstream from Maze Road Bridge (State Hwy 132), at El Solyo Ranch pump intake. Gage on left bank approximately 0.5 mile upstream from bridge.	DWR	B-192	B-262

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
San Joaquin River near Mendota	25	13S/15E-7	5	From left bank at foot of gage house, 2.5 miles downstream from Mendota and 4 miles north of Mendota on Bass Road.	DWR	B-193	B-262
San Joaquin River at Merced River	30a	7S/9E-3	5	Just upstream from confluence of San Joaquin and Merced Rivers.	USBR	B-194	
San Joaquin River at Mossdale Bridge	102	2S/6E-4	5	From boat landing on left bank just downstream from Mossdale Bridge on U.S.Hwy 50 located about 12 miles south of Stockton and 7 miles northeast of Tracy. Gage located on right bank just downstream from bridge.	DWR	B-195	
San Joaquin River at Patterson Water Company	27a	5S/8E-15	5	At Patterson-Turlock Highway Bridge.	USBR	B-196	
San Joaquin River above Salt Slough	111b	7S/10E-26	5	Approximately 5 miles upstream from confluence of San Joaquin River and Salt Slough.	USBR	B-197	
San Joaquin River at San Andreas Landing	112b	3N/3E-13	5	Right bank, one mile below mouth of Mokelumne River.	USBR	B-198	
San Joaquin River near Vernalis	27	3S/6E-13	5	From Durham Ferry Highway Bridge located 3.4 miles northeast of Vernalis. Water stage recorder located on left bank on upstream side bridge.	DWR USGS	B-199	B-262
San Joaquin River at West Stanislaus Irrigation Dist.	27b	4S/7E-10	5	At head of West Stanislaus Irrigation District intake canal.	USBR	B-200	

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By a	Analysis on Page	
						Mineral	Radioassay
San Joaquin River at Whitehouse	24b	13S/15E-25	5	Below head of Gravelly Ford Canal approximately 13.6 miles upstream from Mendota Dam.	USRR	B-201	
South Honcut Creek near Bangor	90	18N/5E-35	5	Right bank at foot of gage located 100 feet upstream from Brown's Valley-Bangor Road Bridge and 2.5 miles southeast of Bangor.	DWR	B-202	
Stanislaus River near mouth	29	3S/7E-17	5	From right bank at foot of gage house. 2.9 miles above the mouth.	DWR	B-203	B-263
Stanislaus River below Tulloch Dam	29a	1S/12E-1	5	Left bank 0.5 miles below Tulloch Dam.	DWR	B-204	B-263
Stockton Ship Channel on Rindge Island	100	2N/5E-27	5	From boat landing on right bank of ship channel at southeast corner of Rindge Tract near junction of Fourteen Mile Slough.	DWR	B-205	
Stony Creek near Hamilton City	13a	22N/2W-36	5	From right bank at gage located 2.5 miles southwest of Hamilton City and 8 miles east of Orland.	DWR	B-206	B-263
Tule River near Porterville	91	21S/28E-25	5	From county road bridge 0.1 mile upstream from South Fork and 6 miles east of Porterville water stage recorder on downstream side of bridge across from Bartlett Park.	DWR	B-207	
Tuolumne River below Lone Pedro Dam	31a	3S/14E-3	5	Left bank 0.25 mile downstream from dam.	DWR	B-208	B-263

TABLE B-5  
SAMPLING STATION DATA  
CENTRAL VALLEY REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By a	Analysis on Page	
						Mineral	Radioassay
Tuolumne River at Hickman-Waterford Bridge	30	3S/11E-34	5	From Hickman-Waterford Bridge, about 1 mile north of Hickman. Water stage recorder is located on the downstream side of bridge.	DWR	B-209	B-263
Tuolumne River at Tuolumne City	31	4S/8E-7	5	From highway bridge on Shiloh Rd. Water stage recorder located on right bank beneath bridge.	DWR	B-210	B-263
Yuba River at Marysville	21	15N/4E-18	5	At Simpson Lane Bridge at Marysville, on left bank. Gage on bridge.	DWR	B-211	B-263
Yuba River near Smartville	21a	16N/6E-30	5	From right bank, 0.5 mile downstream from Highway 20 bridge about 5 miles below Narrows Dam and about 4 miles below confluence of Deer Creek.	DWR	B-212	B-263



TABLE B-6  
SAMPLING STATION DATA  
LAHONTAN REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By	Analysis on Page	
						Mineral	Radioassay
Lake Tahoe at Bijou	39	13N/18E-13	6	From Connolly's Resort Pier at Bijou.	DWR	B-213	B-265
Lake Tahoe at Tahoe City	38	15N/17E-7	6	Upstream from control gates of Truckee River and upstream from State Highway 89.	DWR	B-214	B-265
Lake Tahoe at Tahoe Vista	37	16N/17E-14	6	From pier 0.1 mile west of Tahoe Vista and 8 miles northeast of Tahoe City.	DWR	B-215	B-265
Mojave River at the Forks	67a	3N/3W-18	6	From right bank, 100 feet downstream from confluence of Deep Creek and West Fork of Mojave River.	DWR-LA	B-216	B-265
Mojave River near Victorville	67	6N/4W-29	6	Left bank at USGS gage, 3 miles northwest of Victorville and 500 feet upstream from U.S. Hwy 66 bridge across Lower Narrows.	DWR-LA	B-217	B-265
Susan River at Susanville	17b	30N/12E-31	6	From left bank at foot of USGS gage, 0.5 mile west of Susanville and 1.1 mile upstream from Piute Creek.	DWR	B-218	B-265
Truckee River near Farad	53	18N/17E-12	6	From left bank at foot of gage 2 miles from California-Nevada State line on U.S. Highway 40.	DWR	B-219	B-265
Truckee River near Truckee	52	17N/16E-28	6	From left bank at gage, 1.4 mile upstream from Donner Creek and 2.5 miles southwest of Truckee.	DWR	B-220	B-265



TABLE B-7  
SAMPLING STATION DATA  
COLORADO RIVER BASIN REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By	Analysis on Page	
						Mineral	Radioassay
Alamo River near Calipatria	60	11S/13E-15	7	Left bank 6.2 miles north of Westmorland-Calipatria Highway, 0.4 mile downstream from lateral 3-road bridge at Imperial Irrigation District Station AR-17.	DWR-LA	B-221	B-267
Alamo River at International Boundary	59	17S/16E-18	7	Between All American Canal and International Boundary, upstream from canal seepage pipes. Imperial Irrigation District Station AR-1.	DWR-LA	B-222	B-267
All American Canal near Pilot Knob	56a	16S/21E-24	7	Left bank just upstream from Hwy 80 bridge, over canal, 5 miles west of Yuma Bridge. Imperial Irrigation District Station 1035 (lower slope).	DWR-LA	B-223	B-267
Colorado River near Blythe	56c	7S/23E-2	7	At boat dock approximately 0.5 mile downstream from U.S. Highway 60-70 bridge. Sampled from California Side.	DWR-LA	B-224	B-267
Colorado River below Morelos Dam	56b	8S/24W-28	7	From left bank 0.25 mile downstream from Morelos Dam, Arizona side. The dam is approximately 1.0 mile downstream from California-Mexico Boundary Junction.	DWR-LA	B-225	B-267
Colorado River at Parker Dam	55	2N/27E-16	7	Shore at right bank on California side, 1 mile upstream from USGS gage. 3 miles downstream from Parker Dam. 11 miles northeast of Parker, Arizona. Sampled from River Lodge Boat Dock.	DWR-LA	B-226	B-267

TABLE B-7  
SAMPLING STATION DATA  
COLORADO RIVER BASIN REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By a	Analysis on Page	
						Mineral	Radioassay
Colorado River at Topock, Arizona	54	7N/24E-7	7	At USGS auxiliary gage; right bank California side; on furthest downstream high pressure gas line bridge from Highway 66 bridge.	DWR-LA	B-227	B-267
Colorado River at Yuma, Arizona	56	16S/22E-36	7	Left bank at old Highway 80 bridge. USGS gage is 0.4 mile downstream from sampling point.	DWR-LA	B-228	B-267
Lake Havasu at Metropolitan Water District Intake	56d	3N/27E-28	7	Right bank at the MWD intake, 1.5 mile upstream from Parker Dam.	MWD	B-229	
New River at International Boundary	57	17S/14E-14	7	Right bank at road bridge, 150 yards north of International Boundary. Imperial Irrigation District Station NR-1.	DWR-LA	B-230	B-267
New River near Westmorland	58	12S/13E-30	7	Right bank 50 feet north of Vail Canal, 3 miles west of Calipatria Westmorland Highway 0.6 mile downstream from Trifolium #10 road bridge. Imperial Irrigation District Station NR-17.	DWR-LA	B-231	B-267
Salton Sea at Salton Sea State Park	68a	7S/10E-3	7	From northeast shore at boat launching ramp of Salton Sea State Park.	DWR-LA	B-232	B-267
Whitewater River at Mecca	68b	7S/9E-31	7	Sampled from center of river as flow comes out of road culvert at Lincoln Street crossing.	DWR-LA	B-233	B-267
Whitewater River at Whitewater	68	3S/3E-2	7	8 foot Cipoletti Weir 1.6 mile upstream from Whitewater. 2 USGS gages, one on river & one on Weir.	DWR-LA	B-234	B-267

TABLE B-8  
SAMPLING STATION DATA  
SANTA ANA REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Chino Creek near Chino	86	2S/8W-36	8	Right bank 20 feet upstream from Pine Avenue bridge approximately 5 miles southeast of Chino.	DWR-LA	B-235	
Lake Elsinore near Elsinore	89	6S/5W-1	8	North shore of lake at USGS staff gage, approximately 0.5 mile south of junction of Riverside Drive and State Highway 71.	DWR-LA	B-236	B-269
Santa Ana River near Mentore	51b	1S/2W-4	8	Southern California Edison Company's Santa Ana River No. 3 power plant tailrace. 3.5 miles northeast of Mentone near mouth of canyon.	DWR-LA	B-237	B-269
Santa Ana River at Norco	51e	2S/7W-36	8	At USGS summer gage just downstream from Hammer Avenue bridge on left bank 5 miles north of Corona.	DWR-LA	B-238	B-269
Santa Ana River near Prado Dam	51a	3S/7W-29	8	From left bank at USGS gage; 2500 feet downstream from Prado Dam; 4 miles west of Corona and 1 mile southwest of Prado.	DWR-LA	B-239	B-269
Santa Ana River at River-side	51d	2S/5W-30	8	From left bank, 200 yards upstream from Metropolitan Water District Aqueduct crossing, and 0.5 mile upstream from Riverside sewage treatment plant.	DWR-LA	B-240	B-269



TABLE B-8  
SAMPLING STATION DATA  
SANTA ANA REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Warm Creek at Colton	50b	1S/4W-21	8	From right bank near USGS gage at "F" street bridge, 0.25 mile north of U.S. Hwy. 99 and 0.4 mile east of Mt. Vernon 1.2 mile east of Colton, 0.3 mile below San Bernardino sewage disposal plant.	DWR-LA	B-241	B-269
Warm Creek at San Bernardino	50c	1S/4W-15	8	From right bank beneath "E" St. bridge, 0.5 mile upstream from San Bernardino sewage disposal plant.	DWR-LA	B-242	B-269

TABLE B-9  
SAMPLING STATION DATA  
SAN DIEGO REGION

Sampling Station	Sta. No.	Location	Region	Sampling Point	Sampled By <sup>a</sup>	Analysis on Page	
						Mineral	Radioassay
Escondido Creek near Harmony Grove	63	12S/2W-30	9	Sampled from Harmony Grove Road crossing at culvert, 4 miles south of Escondido.	DWR-LA	B-243	B-271
Forester Creek at Mission Gorge Road	65a	15S/1W-28	9	From center of stream just upstream from Mission Gorge Road.	DWR-LA	B-244	B-271
San Diego River at Old Mission Dam	65	15S/2W-25	9	From left bank just below Old Mission Dam 3 miles west of San Diego	DWR-LA	B-245	B-271
San Dieguito River below San Pasqual Valley	64	13S/2E-1	9	From right bank, 75 yards upstream from USGS gage, 2.5 mile upstream from highway 395 bridge, 4.5 mile southeast of Escondido and 5 miles west of San Pasqual.	DWR-LA	B-246	
San Luis Rey River near Pala	62	9S/2W-36	9	From right bank below Pala Diversion Dam and USGS summer gage 1.8 miles east of Pala.	DWR-LA	B-247	B-271
Santa Margarita River near Fallbrook	51c	9S/4W-12	9	Left bank 2 miles north of Fallbrook and 0.5 miles downstream from Fallbrook Public Utility District gage.	DWR-LA	B-248	B-271
Tia Juana River at International Boundary	66	19S/2W-1	9	From right bank at California Water and Telephone Company gage 2.5 miles upstream from Nestor Bridge.	DWR-LA	B-249	
<sup>a</sup> a. Dept. of the Interior, Bureau of Reclamation (USBR); Dept. of the Interior, Geological Survey (USGS); Dept. of the Army, Corps of Engineers (C of E); State Dept. of Public Health, Bureau of Sanitary Engineering (BSE); State Dept. of Fish and Game (F&G); State Dept. of Water Resources (DWR); State Dept. of Water Resources, Los Angeles Office (DWR-LA); Central Valley Regional Water Pollution Control Board (No. 5) (WPCB#5); City of Long Beach, Dept. of Public Health (LBPH); City of Los Angeles, Dept. of Public Health (LAPH); City of Los Angeles, Dept. of Water and Power (LADW&P); and The Metropolitan Water District of Southern California (MWD).							



TABLE B-10  
ANALYSES OF SURFACE WATER  
NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in equivalents per million										Total Dissolved solids in ppm	Per-cent solidum	Hardness as CaCO <sub>3</sub>		Tur-bid-ity in ppm	Coliform MPN/ml	Analyzed by e			
			ppm	%Sat		Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-trate (NO <sub>3</sub> )	Fluo-ride (F)			Boran (B)	Silico (SiO <sub>2</sub> )				Other constituents		
1957																									
1/8 1050	Not Rated	43	12.8	103	257	8.1	7.7 0.63	7.1 0.31	0.8 0.02	0	126 2.07		5.9 0.17		0.12			12	114	11	0.5	USGS			
2/5 1400		46	15.0	126	7.7	Sample broken																			USGS
3/5 1150		53	12.2	112	122	7.4	4.5 0.37	3.3 0.14	2.5 0.06	0	68 1.11		0.5 0.01		0.14			11	56	0	390	USGS			
4/2 1350		63	11.4	118	147	7.6	5.7 0.47	3.9 0.17	0.8 0.02	0	80 1.31		2.1 0.06		0.01			11	69	3	24	USGS			
5/7 1335		67	10.0	108	176	7.1	6.7 0.55	5.4 0.23	1.1 0.03	0	94 1.54	9.6 0.20	3.5 0.10	0.0 0.00	0.3 0.02	0.00	14	108	80	3	1.1	USGS			
6/4 1900		70	9.0	100	178	7.4	9.5 0.78	4.6 0.20	0.8 0.02	0	97 1.59		2.7 0.08		0.08		Fe 0.01 Al 0.08 Cu 0.02 Zn 0.01 PO <sub>4</sub> 0.05 a	10	94	14	6	USGS			
7/9 1020		72	8.6	98	234	8.3		7.1 0.31		0	123 2.02		4.4 0.12		0.14			13	106	5	0.8	USGS			
8/6 1145		74	9.9	115	275	8.2		8.2 0.36		0	147 2.41		6.7 0.19		0.13			12	131	10	1	USGS			
9/11 0900		68	7.2	78	294	7.9	10 0.83	8.9 0.39	1.8 0.05	0	148 2.43	25 0.52	6.0 0.17	0.2 0.00	0.2 0.01	0.30	14 Al 0.04 PO <sub>4</sub> 0.00 a	170	134	13	1	USGS			
10/18 1220		62	9.6	98	281	6.8		16 0.70		0	105 1.72		20 0.56		0.11			26	100	14	13	USGS			
11/5 1000		51	11.6	103	207	7.2		5.8 0.25		0	109 1.79		4.5 0.13		0.02			12	93	4	2	USGS			
12/17 1150		50	11.8	104	142	7.8		4.6 0.20		0	68 1.11		3.0 0.08		0.20			13	67		140	USGS			

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (OWRI), as indicated

f Field pH except when noted with e

TABLE B-10

## ANALYSES OF SURFACE WATER

## NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance at 25°C	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			ppm	% Sat			equivalents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
1957						f																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate, monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH).

f Long Beach Dept. of Pub. Health (LSBPH) or State Department of Water Resources (DWR), as indicated.

† Field pH except when noted with a.



TABLE B-10

## ANALYSES OF SURFACE WATER

## NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm <sup>b</sup>	Percent Sulfate in ppm	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform <sup>d</sup> MPN/ml	Analyzed by <sup>e</sup>			
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents		
1957																										
1/8 0940	138	41	12.6	98	209	8.1	24 1.20	7.3 0.60	8.0 0.35	0.7 0.02	0 0.00	111 1.82		6.8 0.19			0.13		16	0	3	USGS				
2/5 1110	1100	47	14.8	126		7.8	sample destroyed																			
3/5 1040	14,300	52	12.4	112	85	7.5	8.4 0.42	4.4 0.36	4.0 0.17	2.3 0.06	0 0.00	43 0.70		1.5 0.04			0.12		17	39	4	400	USGS			
4/2 1215	1560	60	10.9	109	132	7.3	14 0.70	5.2 0.43	5.5 0.24	0.8 0.02	0 0.00	71 1.16		3.8 0.11			0.02		17	56	0	16	USGS			
5/7 1140	800	66	9.8	104	156	7.1	18 0.90	5.6 0.46	6.5 0.28	0.8 0.02	0 0.00	82 1.34	7.7 0.16	4.5 0.13	0.0 0.00	0.2 0.01	0.00	17	Al 0.06 Cu 0.02 Fe 0.01 Zn 0.01 PO <sub>4</sub> 0.10 <sup>a</sup>	100	1	1.4	USGS			
6/4 1745	855	74	9.2	106	154	7.3	18 0.90	6.8 0.56	6.5 0.28	0.7 0.02	0 0.00	85 1.39		4.0 0.11			0.01		16	73	3	2	USGS			
7/9 0915	200	69	8.0	88	193	7.3		3.9 0.17			0 0.00	108 1.77		5.1 0.14			0.09		9	82	0	1	USGS			
8/6 1045	130	72	10.0	114	237	7.2		9.2 0.40			0 0.00	122 2.00		7.2 0.20			0.09		16	107	7	5	USGS			
9/11 0800	72	67	6.6	71	247	7.9	26 1.30	11 0.90	11 0.48	1.6 0.04	0 0.00	144 2.36	9.6 0.20	6.2 0.17	0.2 0.00	0.3 0.02	0.18	13	PO <sub>4</sub> 0.00 Al 0.05 <sup>a</sup>	150	0	1	USGS			
10/15 1700	2120	60	9.4	94	169	7.4		6.2 0.27			0 0.00	86 1.41		3.8 0.11			0.08		16	70	0	22	Median 6.2	USGS		
11/5 0845	492	48	10.8	93	180	7.4		7.7 0.33			0 0.00	96 1.57		6.5 0.18			0.07		17	78	0	1	Max. 2400	USGS		
12/17 0920	3680	50	11.4	100	116	7.7		5.5 0.24			0 0.00	54 0.89		4.0 0.11			0.18		20	49		400	Min. 0.23	USGS		

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated.

<sup>f</sup> Field pH except when noted with <sup>e</sup>

TABLE B-10  
ANALYSES OF SURFACE WATER  
NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent sodium in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
			ppm	% Sat		Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													</

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-10  
ANALYSES OF SURFACE WATER  
NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium in ppm	Hardness as CaCO <sub>3</sub> in ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents		
1957																										
Jan.	Snowbound																									
2/6 1440	5150	46	13.4	112		7.6	Sample broken																			
Mar.	Snowbound																									
April	Snowbound																									
5/10 1500	10,800	56	10.8	103	137	6.9	12.60 0.60	5.8 0.48	7.3 0.32	1.4 0.04	0	69 1.13	11 0.23	2.0 0.06	0.6 0.01	0.2 0.01	0.00	16	Cu 0.03 Fe 0.04 PO <sub>4</sub> 0.15	Zn 0.02 Al 0.03	99	22	54	0	2.1	USGS
6/5 1650	9280	68	9.6	104	124	7.3	13.65 0.65	7.4 0.61	5.0 0.22	1.1 0.03	0	66 1.08		2.5 0.07			0.00					15	63	9	1	USGS
7/10 1330	2940	75	9.0	105	162	8.4		8.2 0.36			0	86 1.41		3.3 0.09			0.07					22	65	7	0.9	USGS
8/7 1600	2300	70	10.2	114	175	7.6		12 0.52			0	88 1.44		4.0 0.11			0.03					27	77	0	1	USGS
9/12 1230	2830	72	10.2	116	196	7.9	23.15 1.15	4.0 0.33	15 0.65	2.9 0.07	0	108 1.77	11 0.23	4.3 0.12	2.0 0.03	0.2 0.01	0.19	36	Fe 0.03 PO <sub>4</sub> 0.15	Al 0.06	152	30	74	0	3	USGS
10/16 1450	9000	55	11.4	107	175	7.9			11 0.48		0	88 1.44		4.0 0.11			0.10				Median 6.2	28	63	0	3	USGS
11/6 1300	4440	48	11.6	100	218	7.2			16 0.70		0	104 1.70		6.0 0.17			0.00				Max. 2400 Min. 0.045	31	77	0	4	USGS
Dec.	Snowbound																									

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*



TABLE B-10

## ANALYSES OF SURFACE WATER

## NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in equivalents per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by	
			ppm	%Sol		equivalents per million												Total ppm	N				C
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)								
1957																							
1/7 0920	605	48	10.0	86	323	11 1.55	16 1.29	14 0.61	1.3 0.03	0 0.00	178 2.92		11 0.31			0.84			18	142	0	0.8	USGS
2/4 0900	837	48	11.4	98	281	26 1.30	15 1.21	11 0.48	1.3 0.03	0 0.00	150 2.46		9.0 0.25			0.58		16	126	3	6	USGS	
3/4 0910	5110	56	7.6	72	218	18 0.90	13 1.04	7.6 0.33	1.7 0.04	0 0.00	113 1.85		5.0 0.14			0.21		14	97	4	10	USGS	
4/1 0825	1430	58	11.0	107	252	25 1.25	15 1.21	9.6 0.42	1.0 0.03	0 0.00	136 2.23		6.0 0.17			0.25		14	123	11	17	USGS	
5/6 0910	980	65	8.9	94	254	25 1.25	13 1.05	8.9 0.39	1.0 0.03	0 0.00	140 2.29	12 0.25	6.0 0.17	0.4 0.01	0.1 0.01	0.29	19 0.01	14	115	0	2.4	USGS	
6/3 1115	1060	74	8.0	93	256	26 1.30	13 1.10	8.9 0.39	1.0 0.03	0 0.00	144 2.36		6.0 0.17			0.32	Fe 0.01 Al 0.06 PO <sub>4</sub> 0.15 Cu 0.02 Zn 0.03	14	120	2	3	USGS	
7/8 0915	254	76	7.2	85	288			9.9 0.43		0 0.00	165 2.70		6.0 0.17			0.47		14	130	0	2	USGS	
8/5 0810	146	76	7.3	86	291			10 0.44		0 0.00	164 2.69		6.2 0.17			0.51		14	137	3	1	USGS	
9/10 0830	136	70	8.0	89	279	25 1.25	16 1.31	11 0.48	1.6 0.04	0 0.00	166 2.72	5.8 0.12	4.5 0.13	0.2 0.00	0.3 0.02	0.52	18 0.01	16	128	0	2	USGS	
10/16 1400	2250				226			9.6 0.42		0 0.00	114 1.87		6.5 0.18			0.35		19	93	0	20	USGS	
11/4 0900	716	57	7.8	75	272			10 0.44		0 0.00	148 2.43		7.5 0.21			0.41		15	120	0		USGS	
12/16 0940	1470	53	1.4	14	251			12 0.52		0 0.00	121 1.98		11 0.31			0.51		103		20	Median 23 Max. 7,000 Min. 0.23	USGS	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.00}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*



TABLE B-10  
ANALYSES OF SURFACE WATER  
NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhms at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> Total Alkalinity ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents
1957																									
1/7 1050	158	48	12.0	103	305	8.2	31 1.55	14 1.18	11 0.48	0.9 0.02	0 0.00	173 2.84		7.2 0.20		0.94			15	137	0.5	USGS			
2/4 1035	355	48	13.2	114	266	7.7	26 1.30	13 1.10	10 0.44	1.0 0.03	0 0.00	145 2.38		7.2 0.21		0.64			15	120	8	USGS			
3/4 1100	3620	55	12.2	114	191	7.6	17 0.85	11 0.87	6.8 0.30	1.4 0.04	0 0.00	103 1.69		3.7 0.10		0.29			15	86	80	USGS			
4/1 1320	1060	61	10.9	110	251	7.1	25 1.25	14 1.12	8.4 0.37	0.8 0.02	0 0.00	138 2.26		5.0 0.14		0.33			13	118	14	USGS			
5/6 1020	760	63	9.0	93	243	7.1	25 1.25	13 1.05	7.8 0.34	0.8 0.02	0 0.00	138 2.26	12 0.25	5.0 0.14	0.5 0.01	0.2 0.01		F 0.01 Al 0.05 P 04 0.10 Cu 0.02 Zn 0.02	13	115	2	3.1	USGS		
6/3 1300	860	74	9.5	110	247	7.4	26 1.30	13 1.06	9.6 0.42	1.6 0.04	0 0.00	140 2.29		4.5 0.13		0.34			15	118	3	1	USGS		
7/8 1005	185	74	8.4	97	275	8.4		2.5 0.41			0 0.00	157 2.57		5.6 0.16		0.54			14	124	0	1	USGS		
8/5 1115	180	72	7.4	84	267	7.3		9.6 0.42			0 0.00	156 2.56		6.0 0.17		0.58			14	124	0	1	USGS		
9/10 1030	140	70	8.4	93	258	7.8	24 1.20	15 1.24	8.7 0.38	1.4 0.04	0 0.00	156 2.56	2.9 0.06	5.5 0.16	0.2 0.00	0.2 0.01		P 04 0.00 Al 0.05 Pb 0.01	13	122	0	2	USGS		
10/14 1700	4240	62	7.8	79	169	7.3		6.1 0.27			0 0.00	87 1.43		3.7 0.10		0.27			16	72	1	80	Median 62	USGS	
11/4 1030	680	55	9.3	87	259	7.3		8.7 0.38			0 0.00	146 2.39		5.5 0.16		0.34			14	120	0	3	Max. 7000	USGS	
12/16 1115	2160	55	9.6	90	190	7.8		6.9 0.30			0 0.00	95 1.56		4.0 0.11		0.38			15	82	150	0.21	Min. 0.21	USGS	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-10  
ANALYSES OF SURFACE WATER

NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent total in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-10  
ANALYSES OF SURFACE WATER  
NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sediment in ppm	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by a																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
			ppm	%Sat			equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.00}$  except as shown.

Annual median and range, respectively Calculated from analyses of duplicate monthly samples made by Colif. Dept of Public Health, Division of Laboratories.

f Field pH except when noted with a

TABLE B-10  
ANALYSES OF SURFACE WATER  
NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm <sup>b</sup>	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in cpm	Coliform MPN/ml	Analyzed by <sup>e</sup>						
			ppm	% Sat			equivalents																						
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents					
<u>1957</u>							RUSSIAN RIVER, EAST FORK, AT POTTER VALLEY POWER HOUSE (STA. 10A)																						
1/7 1450	103	42	12.0	95	229	7.9	29 1.45	7.2 0.59	7.7 0.33	0.6 0.02	0 0.00	129 2.11						5.8 0.16			0.72		14	0	102	0	0.5		USGS
2/4 1450	135	43	13.8	111	182	7.7	22 1.10	6.4 0.53	7.5 0.33	0.8 0.02	0 0.00	98 1.61						5.2 0.15			0.56		17	2	82	2	30		USGS
3/4 1500	306	53	12.6	115	145	7.7	14 0.70	7.3 0.60	5.3 0.23	1.4 0.04	0 0.00	79 1.29						1.1 0.03			0.24		15	0	65	0	55		USGS
4/1 1705	161	56	10.8	102	145	7.1	18 0.90	4.7 0.39	5.3 0.23	1.0 0.03	0 0.00	78 1.28						2.0 0.06			0.21		15	0	64	0	29		USGS
5/6 1620	326	60	9.8	98	134	6.9	17 0.85	4.1 0.34	4.5 0.20	0.6 0.02	0 0.00	74 1.21	5.8 0.12					2.3 0.06	PO <sub>4</sub> 0.00 Fe 0.01 Al 0.02 Zn 0.03 <sup>a</sup>	10	0.23	81	0	60	0	5		USGS	
6/3 1745	324	68	9.6	104	140	7.3	18 0.90	5.8 0.48	4.4 0.19	0.5 0.01	0 0.00	77 1.26						2.2 0.06			0.20		12	6	69	6	2		USGS
7/8 1340	216	68	8.8	96	139	8.5			4.7 0.20		0 0.00	78 1.28						2.1 0.06			0.19		13	2	66	2	2		USGS
8/5 1510	217	62	10.0	102	140	8.1			4.5 0.20		0 0.00	78 1.28						2.8 0.08			0.16		13	1	65	1	2		USGS
9/10 1400	218	72	8.2	93	155	7.5	20 1.00	4.7 0.39	4.4 0.19	1.2 0.03	0 0.00	87 1.43	7.1 0.15					3.0 0.08	PO <sub>4</sub> 0.05 Fe 0.01 Al 0.03 <sup>a</sup>	14	0.30	98	0	70	0	2		USGS	
10/15 0940	303	58	10.2	100	172	7.9			6.7 0.29		0 0.00	92 1.51						3.5 0.10			0.42		17	0	73	0	19		USGS
11/4 1445	302	54	9.3	86	156	7.3			5.6 0.24		0 0.00	90 1.48						4.2 0.12			0.23		14	0	74	0	3		USGS
12/16 1545	302	50	10.8	95	126	7.6			5.0 0.22		0 0.00	62 1.02						2.2 0.06			0.42				56		100	Median 6.2 Max. 7,000 Min. 0.12	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B10

## ANALYSES OF SURFACE WATER

## NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm <sup>b</sup>	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents		
<u>1957</u>																										
1/9 1410	1400	42	13.4	106	107	7.8	5.2 0.26	8.1 0.67	1.8 0.08	0.1 0.00	0 0.00	58 0.95	2.6 0.07			0.03		8	56	0	0.6	USGS				
2/7 1535	2430	41	14.6	114		7.7	Sample broken																			USGS
3/7 1500	17,800	51	14.7	131	70.1	7.3	3.6 0.18	6.3 0.52	1.4 0.06	0.1 0.00	0 0.00	41 0.67	1.0 0.03			0.01		8	35	1	1	USGS				
4/4 1510	4920	55	11.8	110	81.0	7.1	4.4 0.22	7.2 0.59	2.0 0.09	0.3 0.01	0 0.00	45 0.74	3.2 0.09			0.00		10	41	4	3	USGS				
5/8 1140	1520	55	11.4	107	97.8	6.9	5.8 0.29	7.7 0.63	2.7 0.12	0.1 0.00	0 0.00	49 0.80	2.0 0.06	0.00 0.01	0.2 0.01	0.00	13 Zn Cu 0.01 PO <sub>4</sub> 0.10 <sup>a</sup>	63	46	6	0.9	USGS				
6/6 1400	1240	63	11.2	116	99.3	7.2	8.4 0.42	7.8 0.64	2.5 0.11	0.1 0.00	0 0.00	55 0.90	1.7 0.05			0.18		9	53	8	0.7	USGS				
7/11 0730	562	66	9.0	96	119	8.1			2.7 0.12		0 0.00	70 1.15	2.9 0.08			0.02		10	56	0	0.8	USGS				
8/8 1600	428	66	10.4	111	130	8.2			6.5 0.28		0 0.00	77 1.26	2.8 0.08			0.00		18	64	1	0.6	USGS				
9/11 1630	300	65	9.6	101	142	7.7	8.0 0.40	12 1.00	2.5 0.11	0.7 0.02	0 0.00	82 1.34	2.3 0.06	0.0 0.00	0.2 0.01	0.01	18 Al 0.04 PO <sub>4</sub> 0.00 <sup>a</sup>	88	70	3	0.5	USGS				
10/17 1245	1270	54	11.4	105	123	8.1			2.1 0.09		0 0.00	72 1.18	2.5 0.07			0.00		7	61	2	1	USGS				
11/7 1430	592	48	11.6	100	120	7.2			2.4 0.10		0 0.00	71 1.16	4.8 0.14			0.00		8	58	0	2	USGS				
12/18 1345	13,800	48	13.2	113	85.9	7.7			1.9 0.08		0 0.00	49 0.80	3.5 0.10			0.04		9	42	0	15	USGS				

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.

TABLE B-10  
ANALYSES OF SURFACE WATER  
NORTH COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			equivalents per million																		
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents
1957																									
	Snowbound																								
Jan.																									
2/6 1050	1700	47	14.0	119			Sample broken																		
3/6 1420	24,000	51	14.0	125	111	7.6	12 0.60	5.6 0.46	2.2 0.10	0.8 0.02	0 0.00	65 1.07		0.0 0.00		0.08									
April																									
5/10 1300	8900	56	11.2	106	96.4	6.8	13 0.65	2.3 0.19	2.7 0.12	0.4 0.01	0 0.00	49 0.80	4.8 0.10	2.5 0.07	0.0 0.01	0.00	17	As 0.01 Cu 0.03 PO <sub>4</sub> 0.00	67	12	42	2	1.4		USGS
6/5 1545	7300	67	9.8	106	105	7.2	12 0.60	5.4 0.44	2.4 0.10	0.3 0.01	0 0.00	59 0.97		2.3 0.06		0.01				9	52	4	10		USGS
7/10 1050	1790	73	8.6	99	158	8.4			4.4 0.19		0 0.00	88 1.44		4.0 0.11		0.09				12	72	0	1		USGS
8/7 1100	943	70	8.6	96	200	7.5			5.8 0.25		0 0.00	109 1.79		5.7 0.16		0.00				12	93	4	0.6		USGS
9/12 1000	617	67	9.0	97	229	7.9	25 1.25	10 0.83	7.2 0.31	1.1 0.03	0 0.00	125 2.05	12 0.25	5.7 0.16	0.0 0.01	0.13	19	Al 0.03 PO <sub>4</sub> 0.00	142	13	104	2	0.6		USGS
10/16 1230	4790	61	10.4	105	155	8.5			3.9 0.17		0 0.00	83 1.36		3.5 0.10		0.08				11	70	2	12	Median 9.6	USGS
11/6 1130	1600	49	10.8	94	173	7.3			5.0 0.22		0 0.00	97 1.59		5.8 0.16		0.08				12	79	0	2	Max. 620 Min. 0.06	USGS
Dec.	Snowbound																								

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with e

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{AO}{QOO}$  except as shown.  
Determined by addition of analyzed constituents.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.





TABLE B-11  
ANALYSES OF SURFACE WATER  
SAN FRANCISCO BAY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (microhmals at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm b	Percent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by a
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)	Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents			
1957										ALAMEDA CREEK NEAR NILES (Sta. 73)											
1/16 1000	6.3	45	10.2	85	1220	8.1	50 4.11	103 4.48	8.4 0.21	0	445 7.29		142 4.00			1.3					USGS
2/20 0950	4.0	53	9.0	82	985	8.1	42 3.44	78 3.39	6.0 0.15	0	373 6.11		87 2.45			1.0					USGS
3/12 1645	19	58	10.6	104	739	7.7	31 2.58	51 2.22	6.9 0.18	0	265 4.34		53 1.49			0.68					USGS
4/17 0900	5.4	58	7.9	77	835	7.9	35 3.59	61 2.65	3.8 0.10	0	342 5.61		56 1.58			0.77					USGS
5/16 1315	3.8	70	8.3	92	994	8.3	40 3.30	81 3.52	4.9 0.13	0	384 6.29	100 2.08	91 2.57	0.1 0.00	0.4 0.02	1.3	10	Fe 0.01 Al 0.17 Cu 0.01 Zn 0.03 Pb 0.55 a			USGS
6/19 0915	1.4	73	7.5	86	890	8.3	37 3.06	70 3.04	4.2 0.11	14 0.47	322 5.28		66 1.86			0.89					USGS
7/17 0815	0	72	7.1	81	960	8.3		88 3.83		0	348 5.70		63 1.78			1.1					USGS
8/21 0850	Dry																				
9/12 0850	Dry																				
10/14 1100	Dry																				
11/20 1000	1.2	54	10.2	94	1040	8.1		76 3.31		0	324 5.31		77 2.17			0.83					USGS
12/17 1435	20	51	10.4	93	1500	8.1		136 5.92		0	437 7.16		210 5.92			1.4				Median 14.6 Max. 7,000 Min. 0.13	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e



TABLE B-11  
ANALYSES OF SURFACE WATER  
SAN FRANCISCO BAY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhm at 25°C)	pH f	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sediment	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1957	Tidal																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	</

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

<sup>f</sup> Field pH except when noted with \*

TABLE B-11

ANALYSES OF SURFACE WATER  
SAN FRANCISCO BAY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm <sup>b</sup>	Percent Sodium in ppm	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with a

TABLE B-11  
ANALYSES OF SURFACE WATER  
SAN FRANCISCO BAY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhm-cm at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm <sup>b</sup>	Per- cent sodium	Hardness as CaCO <sub>3</sub>		Tur- bid- ity in ppm	Coliform <sup>d</sup> MPN/ml	Analyzed by <sup>a</sup>				
			ppm	% Sat			equivalents																				
							Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)			Boron (B)	Silico (SiO <sub>2</sub> )				Other constituents			
1957									LOS GATOS	GATOS	CREEK	AT LOS GATOS	GATOS	(STA. 74)													
1/17 1240	5.2	48	11.9	102	609	7.9	74 3.69	30 2.47	19 0.83	2.6 0.07	0 0.00	308 5.05		15 0.42			0.03						12	308	55	0.4	USGS
2/21 1105	7.0	51	10.6	95	658	7.9	78 3.89	31 2.55	24 1.04	2.4 0.06	0 0.00	283 4.64		16 0.45			0.08						14	322	90	2	USGS
3/11 1220	23	58	10.0	98	224	*7.0	23 1.15	7.7 0.63	7.9 0.34	2.5 0.06	0 0.00	69 1.13		6.0 0.17			0.03						16	89	32	288	USGS
4/17 1705	66	59	9.7	96	371	7.7	41 2.05	14 1.15	13 0.57	1.9 0.05	0 0.00	133 2.18		9.5 0.27			0.16						15	160	51	102	USGS
5/16 1100	6.7	60	9.3	93	623	8.0	78 3.89	26 2.11	24 1.04	3.2 0.08	0 0.00	273 4.47	101 2.10	12 0.34	1.2 0.02	0.3 0.02	0.19	15 Fe 0.01 Al 0.14 Cu 0.01 Zn 0.03 PO <sub>4</sub> 0.10 <sup>a</sup>				395	15	300	76	60	USGS
6/20 0930	5.5	64	9.2	96	560	8.1	69 3.44	24 1.98	20 0.87	2.5 0.06	8 0.27	249 4.08		67 1.89			0.09						14	271	54	50	USGS
7/17 1250	1.16	72	8.8	100	768	8.1			27 1.17		0 0.00	368 6.03		18 0.51			0.23						13	388	86	1	USGS
8/21 1045	0.64	65	9.2	97	682	8.0			28 1.22		0 0.00	338 5.54		20 0.56			0.13						16	330	53	0.3	USGS
9/12 1020	0.57	64	8.8	92	703	8.0	85 4.24	31 2.56	25 1.09	3.2 0.08	0 0.00	350 5.74	78 1.62	20 0.56	0.5 0.01	0.2 0.01	0.03	21 Fe 0.25 Al 0.01 PO <sub>4</sub> 0.12 Zn 0.01 <sup>a</sup>			436	14	340	53	0.3	USGS	
10/15 0940	10	58	9.5	92	640	8.1			23 1.00		0 0.00	306 5.02		18 0.51			0.13						14	308	57	3	USGS
11/20 1145	2	56	10.7	102	728	8.1			29 1.26		0 0.00	343 5.62		22 0.62			0.11						15	357	76	0.8	USGS
12/16 1415	8.4	53	10.3	94	378	7.8			14 0.61		0 0.00	144 2.36		13 0.37			0.05						16	165	47	280	USGS

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents.

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

<sup>f</sup> Field pH except when noted with \*.

TABLE B-11

## ANALYSES OF SURFACE WATER

SAN FRANCISCO BAY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million											Total Dissolved Solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by	
			ppm	% Sat		equivalents per million																	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)							Silica (SiO <sub>2</sub> )
1957						NAPA RIVER NEAR ST. HELENA (STA. 72)																	
1/15 0815	28	47	10.0	85	261	17 0.85	7.4 0.61	23 1.00	4.3 0.11	0 0.00	90 1.48		25 0.70				0.83				USGS		
2/19 0800	9.7	56	8.5	81	300	18 0.90	10 0.86	28 1.22	3.4 0.09	0 0.00	112 1.84		30 0.85				0.94				USGS		
3/14 1200	126	53	10.8	99	163	14 0.70	4.9 0.40	11 0.48	1.9 0.05	0 0.00	68 1.11		8.5 0.24				0.26				USGS		
4/15 1530	32	61	10.1	102	224	17 0.85	7.4 0.61	17 0.74	2.8 0.07	0 0.00	96 1.57		13 0.37				0.36				USGS		
5/14 1005	21	62	8.6	88	247	19 0.95	8.1 0.67	19 0.83	2.8 0.07	0 0.00	107 1.75	12 0.25	15 0.42	2 0.03	0.5 0.03		0.62	42 Fe 0.04 Al 0.10 Cu 0.01 Zn 0.02 PO <sub>4</sub> 0.60 a			USGS		
6/20 1430	9.0	73	8.7	100	260	21 1.05	9.7 0.80	17 0.74	2.9 0.07	0 0.00	120 1.97		13 0.37				0.42				USGS		
7/16 1205	1.3	73	9.8	112	319			18 0.78		0 0.00	156 2.56		16 0.45				0.43				USGS		
8/20 0700	0.5	68	6.8	74	352			19 0.83		0 0.00	182 2.98		12 0.34				0.40				USGS		
9/11 0730	0	68	5.5	60	356	20 1.50	15 1.23	20 0.87	3.3 0.08	0 0.00	187 3.06	13 0.27	12 0.34	0.5 0.01	0.3 0.02		0.37	31 PO <sub>4</sub> 0.25 a			USGS		
10/15 1430	19	62	8.6	87	254			20 0.87		0 0.00	94 1.54		21 0.59				0.65				USGS		
11/19 0815	13	53	9.2	84	246			21 0.91		0 0.00	100 1.64		19 0.54				0.43				USGS		
12/18 0800	700	50	10.2	90	108			8.7 0.38		0 0.00	44 0.72		6.5 0.18				0.14			Median 230. Max. 7,000 Min. 6.2	USGS		

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{90}{1000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents.

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

<sup>f</sup> Field pH except when noted with <sup>a</sup>.





TABLE B-12

## ANALYSES OF SURFACE WATER

## CENTRAL COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro mhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm <sup>b</sup>	Per cent total as CaCO <sub>3</sub>	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
			ppm	% Sat			equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-12  
ANALYSES OF SURFACE WATER  
CENTRAL COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium in ppm	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by		
			ppm	%Sat			equivalents per million																		
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents	
1957																									
1/16 1340	10	49	10.7	94	1220	8.1	82 4.09	61 5.01	106 4.61	3.9 0.10	0 0.00	460 7.54			108 3.05			0.74			455	78	60	USGS	
2/20 1320	5.8	56	11.1	106	1340	8.1	86 4.29	69 5.67	120 5.22	3.4 0.09	0 0.00	428 7.01			120 3.38			0.81			498	147	5	USGS	
3/12 1350	52	60	9.2	92	690	8.1	53 2.64	30 2.46	53 2.31	2.1 0.05	0 0.00	244 4.00			48 1.35			0.95			255	55	21	USGS	
4/17 1225	9.3	59	8.8	87	1510	8.1	106 5.29	82 6.71	127 5.52	3.4 0.09	0 0.00	430 7.05			112 3.16			0.79			600	247	4	USGS	
5/15 1450	6.5	68	7.9	86	1510	8.2	99 4.94	64 5.26	154 6.70	3.2 0.08	0 0.00	471 7.72	263 5.48		131 3.69			1.0	20	Fe 0.15 Al 0.26 Cu 0.01 Zn 0.03 PO <sub>4</sub> 0.45 a	969	510	24	2	USGS
6/19 1315	2.4	69	8.2	90	1310	8.3	82 4.09	52 4.25	133 5.79	3.6 0.09	22 0.73	419 6.87			125 3.52			1.0		Tot. Alk. 464	417	37	3	USGS	
7/17 1120	0.42	65	9.0	95	1760	8.1			236 10.27		0 0.00	543 8.90			270 7.61			1.6			430	0	1	USGS	
8/21 1345	0.65	67	9.0	97	1690	8.1			214 9.31		0 0.00	576 9.44			178 5.02			0.91			490	18	3	USGS	
9/12 1400	1.90	65	8.8	93	1680	8.1	78 3.89	76 6.25	197 8.57	6.0 0.15	13 0.43	555 9.10	219 4.56		159 4.48			0.82	10	Tot. Alk. 581 PO <sub>4</sub> 0.75 Fe 0.01 Al 0.34 a	507	31	3	USGS	
10/14 1445	2.14	63	8.3	86	1680	8.3			188 8.18		28 0.93	528 8.65			162 4.57			0.80			500	20	4	USGS	
11/20 1440	1.4	58	8.4	82	2020	8.0			257 11.18		7 0.23	495 8.11			374 10.55			1.5		Tot. Alk. 509	408	0	0.6	USGS	
12/17 1015	10	50	9.0	79	1720	8.1			197 8.57		0 0.00	579 9.49			182 5.13			1.3			504	29	10	USGS	
																								Median 42 Max. 7,000 Min. 21	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-12

[illegible]

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.00}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents

Gravimetric determination of

Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Colit. Dept. of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Continental Water District (PCWD), Metropolitan Water District of Water & Power (LADWP), City of Los Angeles Dept of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

Field pH except when noted with a

TABLE B-12  
ANALYSES OF SURFACE WATER  
CENTRAL COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent suspended - Total in ppm	Hardness as CaCO <sub>3</sub> Total in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
			ppm	% Sat			equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
1957									SAN LORENZO RIVER	AT BIG TREES (STA. 75)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				</

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.  
b Determined by addition of analyzed constituents.  
c Gravimetric determination.  
d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.  
e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.  
f Field pH except when noted with e.



TABLE B-12

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a	
			ppm	%Sol			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents
SANTA FE RIVER BELOW LOS LAURELES CANYON (Sta 45)																								
1957																								
Jan.	Dry																							
2/6 1200	0.6	61	11.1	112	1269	8.0																		
3/6 1030	12	59	9.2	91	1089	6.8																		
4/2 0800	3.6	55	8.8	83	1183	8.0																		
5/8 0900	2.6	59	6.6	65	1149	7.6	129 6.44	54 4.44	51 2.22	2.1 0.05	0 0.00	306 5.02	341 7.11	26 0.73	0.2 0.00	0.5 0.03	0.36 10		a					
6/6 0830	0.5	63	7.8	80	1070	7.6																		
July	Dry																							
Aug.	Dry																							
Sept.	Dry																							
Oct.	Dry																							
Nov.	No report																							
Dec. 4 0900	Dry																							
																			Median					
																			18					
																			Max.					
																			240					
																			Min.					
																			1.3					

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents.

Gravimetric determination.

Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPDH) or State Department of Water Resources (DWR), as indicated

<sup>f</sup> Field pH except when noted with a



TABLE B-12

## ANALYSES OF SURFACE WATER

## CENTRAL COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance at 25°C	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO3 Total in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
			ppm	% Sat			equivalents															
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO3)	Bicarbonate (HCO3)	Sulfate (SO4)	Chloride (Cl)	Nitrate (NO3)	Fluoride (F)						
1957																						
Jan.	Dry																					
2/6 1100	4.5	57	7.8	75	1239	8.0				0 421 0.00 6.90			49 1.38			0.29			16	587	-5	DWR
3/6 0930	east 15	61	16.2	102	1140	6.8				0 391 0.00 6.41			48 1.35			0.72			21	486	-5	DWR
4/2 0700	4.1	54	8.0	74	1183	8.0				0 414 0.00 6.79			51 1.44			0.34			19	564	-5	DWR
5/8 0800	4.1	59	8.2	81	1209	7.6	113 5.64	68 5.59	2.4 0.06	0 415 0.00 6.81	262 5.46		50 1.41	0.1 0.00	0.4 0.02	0.38 20		874	19	562 216	-5	DWR
6/6 1000	1.5	64	6.0	63	1166	7.6				0 415 0.00 6.80			48 1.35			0.38			19	571	-5	DWR
July	Dry																					
Aug.	Dry																					
Sept.	Dry																					
Oct.	Dry																					
11/7 0800	east 2	55	9.4	88	1094	8.0				0 400 0.00 6.57			44 1.21			0.40			18	575	-5	DWR
12/4 0800	6.8	52	10.2	92	1076	8.0				0 402 0.00 6.59			45 1.27			0.60			19	592	-5	DWR
																						Median 23 Max. 700 Min. 0.45

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-12  
ANALYSES OF SURFACE WATER  
CENTRAL COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	equivalents per million									
															Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents
1957																								
1/17 1040	21	45	12.4	103	795	7.9	84 4.19	23 1.93	52 2.26	4.0 0.10	0 0.00	246 4.03	CREEK AT SOQUEL (STA. 76)	68 1.92				0.02			306	104	1.0	USGS
2/21 0855	15	52	10.6	96	659	7.9	63 3.14	22 1.78	43 1.87	5.5 0.14	0 0.00	203 3.33		52 1.47				0.04			246	80	30	USGS
3/11 1545	50	60	9.5	95	493	8.1	55 2.74	14 1.16	26 1.13	2.7 0.07	0 0.00	158 2.59		22 0.62				0.33			195	65	47	USGS
4/17 1525	26	57	10.4	100	614	8.1	66 3.29	18 1.51	38 1.65	3.6 0.09	0 0.00	204 3.34		38 1.07				0.16			240	73	22	USGS
5/14 0930	24	58	10.5	102	653	8.1	72 3.59	19 1.53	45 1.96	3.4 0.09	0 0.00	226 3.70		38 1.07	0.1 0.00	0.3 0.02		0.16	24 Fe 0.03 Al 0.09 Cu 0.01 Zn 0.02 PO <sub>4</sub> 0.25 a		256	71	3	USGS
6/20 0645	16	62	9.2	94	677	8.1	76 3.79	19 1.55	40 1.74	3.2 0.10	6 0.20	221 3.62		41 1.16				0	Tot. Alk. 233		267	76	1	USGS
7/17 1440	4.9	66	9.3	99	742	8.1		47 2.04			0 0.00	253 4.15		56 1.58				0.17			296	89	0.6	USGS
8/21 1245	3.3	74	10.3	119	739	8.3		48 2.09			0 0.00	246 4.03		63 1.78				0.13			287	85	0.9	USGS
9/12 1230	3.2	73	11.7	134	757	8.4	81 4.04	21 1.72	45 1.96	5.1 0.13	6 0.20	234 3.84		65 1.83	0.2 0.01	0.1 0.01		0.15	25 Tot. Alk. 246 PO <sub>4</sub> 0.35 Fe 0.01 Al 0.02 a		268	86	1	USGS
10/15 0723	8.9	54	10.0	93	828	8.1		55 2.39			0 0.00	243 3.98		77 2.17				0.17			306	107	2	USGS
11/20 1340	6.5	58	12.2	118	823	8.3		56 2.44			6 0.20	236 3.87		81 2.28				0.09	Tot. Alk. 248		310	107	0.6	USGS
12/16 1650	266	53	10.3	94	366	7.9		19 0.83			0 0.00	116 1.90		16 0.45				0.11			141	46	220 Median 62 Max. 7,000 Min. 5	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{50}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.

TABLE B-12  
ANALYSES OF SURFACE WATER  
CENTRAL COASTAL REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent acid - um	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- in ppm	Coliform MPN/ml	Analyzed by e
						equivalents															
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fure (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)						
UVAS CREEK NEAR MORGAN HILL (STA. 96)																					
1957																					
1/16 1235	Not Rated	50	10.6	94	398	7.7	14 2.20	18 1.52	0.7 0.02	0 0.00	200 3.28		7.0 0.20			0.11			14 186 22 2	USGS	
2/20 1215		53	10.5	96	411	7.7	14 2.25	21 1.71	0.7 0.02	0 0.00	217 3.56		8.6 0.24			0.13			14 198 20 0	USGS	
3/12 1445		56	10.8	103	313	8.4	35 1.75	16 1.28	0.2 0.02	6 0.20	150 2.46		6.3 0.18			0.06	Tot. Alkalinity 162		15 152 19 1	USGS	
4/17 1115		56	10.1	96	382	7.9	39 1.95	22 1.85	0.7 0.02	0 0.00	203 3.33		6.0 0.17			0.05			13 190 24 0.4	USGS	
5/16 0845		60	10.2	102	393	8.1	45 2.25	19 1.53	1.0 0.03	0 0.00	206 3.38	31 0.65	6.8 0.19	0.2 0.00	0.1 0.01	0.06	Al 0.06 Zn 0.01		13 189 20 0.3	USGS	
6/19 1150		74	9.0	104	356	8.3	42 2.10	15 1.23	0.8 0.02	6 0.20	180 2.95		5.7 0.16			0.15	Tot. Alkalinity 192		13 166 9 0.3	USGS	
7/17 1020		74	8.3	96	357	7.9							5.2 0.15			0.01			15 167 5 1	USGS	
8/22 1010		74	6.4	74	406	7.3							7.3 0.21			0.10			14 194 10 1	USGS	
9/13 0930		68	8.3	90	409	7.5	45 2.25	18 1.51	1.3 0.03	0 0.00	215 3.52	32 0.67	8.4 0.24	1.6 0.03	0 0.00	0.17	PO <sub>4</sub> 0.00 Al 0.07 Cu 0.01 a		15 188 12 3	USGS	
10/14 1315		70	9.9	110	365	8.2							6.5 0.18			0.07			14 174 13 1	USGS	
11/21 1020		55	10.4	98	372	7.9							6.7 0.19			0.14			15 174 8 0.2	USGS	
12/17 1145 H		50	10.4	92	307	7.3							9.0 0.25			0.13			16 132 17 7	USGS	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-13  
ANALYSES OF SURFACE WATER  
LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in nptm	Coliform MPN/ml	Analyzed by
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957																					
1/2 1030	7.5	65	0.0	0.0	*					0	484										LBDPH
2/6 1025	13.0	79	0.0	0.0	7.4					0	728										LBDPH
3/6 1030	13.0	61			8.2					0	194										LBDPH
4/3 1040	10.5	68	3.2	35	8.5					25	175										LBDPH
5/24 1400	11.3	80	0.0	0	7.9	386	181	5925	50	0	777	85							75		DWR
6/5 1050	13.1	90	0.0	0	7.4	19.26	4.88	2574	1.28	0.00	12.74	1.78									LBDPH
7/3 0830	16	90	0	0	7.3					0	702										LBDPH
8/7 1100	11.6	84	1.6	20	7.0					0	706										LBDPH
9/19 1400	13.9	81	5.2	65	8.1	258	131	3200	34	0	592	127							30		DWR
10/2 1045	14.6	77	4.0	48	7.6					0	355										LBDPH
11/6 1010	46	62	5.5	56	*					0	212										LBDPH
12/4 1050	14.5	75	2.0	23	7.8					0	625										LBDPH

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.



TABLE B-13

Date and time sampled	Discharge Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent suspended matter	Hardness as CaCO <sub>3</sub> ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by a
		ppm	%Sat			equivalents																
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba) (SiO <sub>2</sub> )	Other constituents			

1957						LOS ANGELES RIVER AT LOS ANGELES (Sta 47)																			
1/2 1140	0.8	64	17.1	179	8.4*	67/3.34	36/2.96	215/9.35	5.6/0.14	7/0.24	115/1.88	326/6.80	240/6.77	0.5/0.01	0.8/0.04	1.2/25	0.00				14	783	LADPH		
2/13 1200	2.0	75	10.4	122	8.9				60/2.0	115/1.88			88/2.48							0	558	LADPH			
3/6 1000	2.6	67	13.0	140	8.1				30/1.0	170/2.79			720/20.3			4.0				43	617	LADPH			
4/3 1215	2.1	79	15.4	187	8.8				90/3.00	115/1.88			360/10.15			1.0				62	469	LADPH			
5/24 1200	3.9	72	22.0	249	8.4	1562								0.5/0.01	0.8/0.04	1.2/25		a	1035	59	315	DWR			
6/5 1130	2.1	80	11.4	142	8.4				60/2.00	180/2.95			256/7.22			0.4				49	476	LADPH			
7/3 1030	1.4	81	18.4	229	8.7				60/2.0	165/2.70			380/10.72			0.7				52	651	LADPH			
8/7 1100	0.7	84	19.2	245	8.5*				8/0.27	162/2.66			333/9.39			0.55				64	355	LADPH			
9/19 1215	0.4	79	16.6	199	8.4				0/0.00	257/4.22			380/10.72	5.0/0.08	0.8/0.04	1.2/20		PO <sub>4</sub> O.08 a	1388	60	405	194 -5	DWR		
10/2 1045	0.4	78	19.2	234	8.5				70/2.33	175/2.87			430/12.13							28	995	LADPH			
11/7 1115	2.50	69	12.5	139	8.4*				100/3.33	125/2.05			79/2.23							21	572	LADPH			
12/4 1020	1.2	58	23.4	225	8.4				105/3.50	165/2.70			270/7.61							35	838	LADPH			
Median																		62							
Max.																		24,000							
Miles																		6							

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

Determined by addition of

Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>a</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

Field pH except when noted with a



TABLE B-13

## ANALYSES OF SURFACE WATER

## LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million equivalents per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Califormity MPN/ml	Analyzed by
					Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957																				
1/9 0930	5.4	54	9.2	85	1360	8.0			0.00	286		125			2.60		31	459	-5	DWR
2/13 1200	7.6	61	9.2	92	1083	8.0			0.00	239		35			0.94		21	464	-5	DWR
3/12 0920	16	54	8.6	79	971	6.8			0.00	237		19			0.56		19	435	-5	DWR
4/2 1130	8.2	59	7.8	77	1028	8.0			0.00	264		30			0.85		20	457	-5	DWR
5/8 1200	7.3	59	8.4	83	1000	8.2	35	2.2	0.00	246	289	32	0.1	0.7	0.85	10	22	429	-5	DWR
6/11 1030	4.8	64	8.8	92	1046	7.8	2.88	0.06	0.00	4.04	6.02	0.90	0.00	0.04			22	439	-5	DWR
7/3 1000	2.7	70	8.2	91	1189	7.6			0.00	271		45			1.30		31	432	-5	DWR
8/9 1330	1.4	59	4.0	40	943	8.4			0.00	195		36			0.80		23	384	-5	DWR
9/4 0800	0.8		7.8		1235	8.0	114	3.6	0.00	312	224	147	0.5	2.0	4.2	25	35	447	-5	DWR
10/16 0900	1.2	67	9.6	103	1428	8.0	4.96	0.09	0.00	5.12	4.67	4.15	0.01	0.11			37	460	-5	DWR
11/7 1100	1.5	61	10.0	100	1247	8.0			0.00	299		159			3.52		33	473	-5	DWR
12/4 1100	2.0	57	10.4	100	1198	7.8			0.00	296		138			3.62		34	464	-5	DWR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with a.

TABLE B-13

## ANALYSES OF SURFACE WATER

## LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance at 25°C	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>	Turbidity in ppm	Coliform MPN/ml	Analyzed by a
						equivalents															
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)						
1957	Not Available					METROPOLITAN WATER DISTRICT AQUEDUCT AT LA VERNE (Sta 69)															
Jan.	53	8.5		1258	8.5	101 5.04	35 2.88	123 5.35	5 0.13	2 0.07	156 2.56	360 7.49	111 3.13	0.9 0.01	0.4 0.02		9.0	40	396		MWD
Feb.	53	8.5		1285		102 5.09	34.5 2.84	121 5.26	5 0.13	2 0.07	156 2.56	366 7.61	109 3.07	1.8 0.03	0.4 0.02		8.9	39	397		MWD
Mar.	56	8.5		1280		101 5.04	35 2.88	122 5.31	5 0.13	2 0.07	153 2.51	367 7.63	110 3.10	1.8 0.03	0.3 0.02		8.9	40	396		MWD
April		8.4	10.0	1270		100 4.99	34.5 2.84	121 5.26	6 0.15	1 0.03	155 2.54	363 7.55	110 3.10	1.4 0.02	0.4 0.02		8.9	40	392	1.7	MWD
May	61	8.3		1250		99 4.94	33 2.71	121 5.26	6 0.15	0 0.00	151 2.48	361 7.51	109 3.07	1.3 0.02	0.4 0.02		8.8	40	383	0.9	MWD
June	67	8.2		1220		93 4.64	33.5 2.75	122 5.31	5 0.13	0 0.00	142 2.33	356 7.40	107 3.02	1.1 0.02	0.4 0.02	0.16	9.1	41	370	1.2	MWD
July	74	8.3		1185		88 4.39	33 2.71	121 5.26	5 0.13	1 0.03	129 2.12	351 7.30	109 3.07	1.1 0.02	0.3 0.02		9.4	42	355	1.3	MWD
Aug.	77	8.3		1180		87 4.34	33 2.71	117 5.09	6 0.15	2 0.02	127 2.08	338 7.03	108 3.05	0.7 0.01	0.4 0.02		9.2	41	353	0.8	MWD
Sept.	75	8.4		1195		88 4.39	33 2.67	114 4.96	6 0.15	2 0.07	126 2.07	340 7.07	107 3.02	0.4 0.01	0.3 0.02		8.6	41	353	0.8	MWD
Oct.	-	8.3		1175		89 4.44	32 2.63	113 4.92	5 0.13	2 0.07	132 2.16	335 6.97	105 2.96	0.6 0.01	0.4 0.02	0.7	9.5	41	354		MWD
Nov.	63	8.4		1180		91 4.54	32 2.59	112 4.87	5 0.13	1 0.03	142 2.33	331 6.88	104 2.93	1.2 0.02	0.3 0.02		9.5	40	357	0.9	MWD
Dec.	57	8.4		1195		92 4.59	32 2.63	112 4.87	5 0.13	1 0.03	149 2.44	329 6.84	104 2.93	1.1 0.02	0.2 0.01		9.2	40	361	1.7	MWD

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

[illegible]

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.  
Determined by addition of analyzed constituents.

**Gravimetric determination.**

Annual median and range, respectively. Calculated from onalyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

Mineral onalyses made by USGS. Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept of Pub Health (LADPH), Long Beach Dept of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated.

Field pH except when noted with \*

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu). Determined by addition of analyzed constituents.

Gravimetric determination.

Annual median and range, respectively Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District of Water & Power (LADWP), City of Los Angeles Dept of Pub Health (LADPH), Long Beach Dept of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

Field pH except when noted with a



TABLE B-13  
ANALYSES OF SURFACE WATER  
LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent suspended in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.  
b Determined by addition of analyzed constituents.  
c Gravimetric determination.  
d Annual median and range. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.  
e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.  
f Field at exact when noted with \*

Field pH except when noted with a



TABLE B-13

## ANALYSES OF SURFACE WATER

## LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO3 ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
			ppm	% Sat			equivalents per million															
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO3)	Bicarbonate (HCO3)	Sulfate (SO4)	Chloride (Cl)	Nitrate (NO3)	Fluoride (F)						
1957																						
1/8 1005	5.8	63	4.4	45	607	7.4				0 201 0.00 3.29			33 0.93			0.17			30 208	-5	DWR	
2/7 0940	5.6	58	7.0	68	773	7.9			0 254 0.00 4.16				46 1.30			0.11			33 255	-5	DWR	
3/6 1525	6.2	73	6.2	71	1225	8.0			0 242 0.00 3.97				92 2.59			0.26			53 290	-5	DWR	
4/9 0800	4.1	62	11.5	118	524	8.1			0 256 0.00 4.20				54 1.52			0.16			36 258	-5	DWR	
5/7 0955	5.3	64	9.6	101	689	8.2			0 250 0.00 4.10	103 2.14			48 1.35	6.5 0.11 0.03		0.60 0.18 0.03	30	490 35	249	-5	DWR	
6/11 0700	4.5	65	7.0	73	829	7.7			0 234 0.00 3.84				58 1.64			0.19			38 272	-5	DWR	
7/2 1000	5 est	90	8.4	115	1019	8.4			0 235 0.00 3.85				75 2.12			0.23			45 286	-5	DWR	
8/5 0645	5.3	67	7.7	84	917	8.1			0 265 0.00 4.67				72 2.03			0.19			38 286	-5	DWR	
9/4 1145	3.7	86	8.4	110	881	8.4			0 305 0.00 5.00	120 2.49			60 1.69	2.0 0.15 0.04		0.80 0.20 0.04	40	625 30	313 63	40	DWR	
10/8 0750	2.2	61	8.0	80	1647	7.9			0 229 0.00 3.75				246 6.94			0.14			58 333	-5 Median 230	DWR	
11/6 1400	4.90	66	6.6	71	588	7.7			0 220 0.00 3.61				42 1.18			0.14			35 215	-5 Max. 7000	DWR	
12/3 0845	6.0	53	12.0	111	737	8.1			14 223 0.47 3.65				58 1.64			0.20			38 253	-5 Min. 12	DWR	

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with a.

TABLE B-13

ANALYSES OF SURFACE WATER  
LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent suspended	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
1957							SAN GABRIEL RIVER AT												(Sta 50d)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. at Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with a

TABLE B-13

[illegible]

Iron (Fe), aluminum (Al), orsenic (As), copper (Cu), lead (Pb), manganese (Mn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b. Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>a</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPDH) or State Department of Water Resources (DWR), as indicated.

† Field pH except when noted with \*

TABLE B-13

ANALYSES OF SURFACE WATER  
LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent sodium in ppm	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by	
			ppm	%Sol			equivalents per million																
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)
1957							SAN GABRIEL RIVER AT WHITTIER NARROWS (Sta 50)																
1/8 1150	2 est	59	11.4	112	861	8.3					0 193 0.00 3.16			60 1.69			0.02			29	293	-5	DWR
2/7 1050	-1	60	12.5	126	828	8.3					0 221 0.00 3.62			52 1.47			0.03			27	307	-5	DWR
3/6 1600	0.25	70	7.2	80	663	8.3					0 219 0.00 3.59			31 0.87			0.18			21	258	-5	DWR
4/9 0850	50 est	60	9.5	95	1302	8.2					0 154 0.00 2.52			112 3.16			0.26			39	383	125	DWR
5/7 1045	Trickle	79	8.8	107	581	8.3	65 3.24	18 1.48	32 1.70	108 2.25	0 193 0.00 3.16			37 1.04	1.0 0.02	0.20 0.01	20			26	236	-5	DWR
6/11 0745	Ponded	66	8.0	86	1117	8.3					0 207 0.00 3.39			84 2.37			0.15			34	375	-5	DWR
July	dry																						Median 23  Max. 62  Min. 0.45
Aug.	dry																						
Sept.	dry																						
Oct.	dry																						
Nov.	dry																						
Dec.	dry																						

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.

TABLE B-13  
ANALYSES OF SURFACE WATER  
LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by				
			ppm	% Sat			equivalents per million																			
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (B)	Silica (SiO <sub>2</sub> )	Other constituents	
1957										SANTA CLARA RIVER AT BLUE CUT (STA. 46b)																
5/6 1045	4.5	73			2061	8.2	189 9.43	102 8.38	215 9.35	4.7 0.12	0 0.00	283 4.64	949 19.77	92 2.59	0.5 0.01	0.81 0.04	0.04	1.04 20			1800	34	391	-5	Median 6.1	DWR
9/3 1035	0.43	77	10.8	129	3279	8.1	320 15.97	204 16.77	365 15.88	5.0 0.13	0 0.00	274 6.14	1828 38.06	150 4.23	1.5 0.02	1.21 0.06		1.12 30		PO 0.12 a	2849	32	1637	-5	Max. 62. Min. 0.6	DWR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LAOWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

† Field pH except when noted with \*



TABLE B-13

## ANALYSES OF SURFACE WATER

LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per Cent sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by		
			ppm	% Sat		equivalents per million																	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )
1957						SANTA CLARA RIVER AT L. A. -- VENTURA CO. LINE (STA. 146)																	
1/7 0915	1.9	48	9.4	81	3378	7.8				0	386		182			1.24			39	1182	-5		DWR
2/7 0950	4.0	48	15.0	129	2519	7.8				0	331		118			0.80			35	943	-5		DWR
3/4 0950	16.1	52	9.8	88	2164	8.1	171	111	176	7.5	351	830	84	2.5		0.60		1690	30	882	50		DWR
4/8 1000	10.4	63	12.0	123	1890	8.1	8.53	9.12	7.66	0.19	5.75	17.30	2.37	0.04					31	725	-5		DWR
5/6 1015	4.5	72	11.0	124	1862	8.1	172	22	188	4.5	293	804	87	0.5	0.8	0.72	30	1580	33	807	-5		DWR
6/10 0915	2.04	74	10.0	113	2444	8.3	8.58	7.56	8.18	0.12	4.80	16.76	3.61	0.01	0.04	0.94			36	972	-5		DWR
7/1 0950	0.80	79	9.4	114	2754	8.1				0	364		128			0.94			40	1056	-5		DWR
8/5 0900	0.45	73	9.0	102	3484	8.4				0	348		161			1.06			43	1137	-5		DWR
9/3 1005	0.43	79	8.4	102	3223	8.1	266	159	456	6.9	372	1638	232	1.5	1.0	1.56	20	2732	40	1317	100		DWR
10/7 0950	0.46	67	10.0	107	3509	8.3	13.27	13.07	19.83	0.17	6.10	34.10	6.54	0.02	0.05				43	1180	-5	Median 18	DWR
11/4 1020	1.0	64	12.4	130	2959	8.3				0	368		225			1.2			41	1125	-5	Max. 620	DWR
12/2 0950	1.05	50	12.0	106	2915	8.0				0	342		194			1.12			42	1129	-5	Min. 0.6	DWR

a iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBDPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.

TABLE B-13  
ANALYSES OF SURFACE WATER  
LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent Sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents
1957																									
1/7 1135	3 est	50	7.8	69	1821	7.5														DWR					
2/7 1115	35 est	51	10.5	95	1946	7.4														DWR					
3/4 1215	125 est	61	8.4	84	1403	6.1														DWR					
4/8 1140	20 est	66	10.0	107	2058	7.6														DWR					
5/6 1445	30 est	70	10.4	116	1818	8.1														DWR					
6/10 1130	25 est	75	11.0	129	2028	8.4														DWR					
7/1 1200	20 est	75	11.0	129	1947	8.2														DWR					
8/5 1130	5 est	76	11	130	1919	8.1														DWR					
9/3 1445	12 est	75	12.0	141	1603	8.2														DWR					
10/7 1130	10 est	67	9.5	101	1894	8.1														DWR					
11/4 1305	40 est	61	10.2	102	1621	7.6														DWR					
12/2 1140	20 est	58	9.0	87	1862	7.7														DWR					

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sulfur	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
			ppm	% Sat			equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
			Calcium (Ca)	Magne- sium (Mg)			Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)	Baron (B) (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
1957							SANTA CREEK	PATA	SANTA CREEK	UNAR	SANTA CREEK	PATA	UNAR	SANTA CREEK																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100.0}$  except as shown.

b Determined by addition of analyzed constituents.

Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories and Geometric Determination.

a Mineral analyses made by USGS, Quality of Water Branch (USGS). Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD) Los Angeles Dept of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropoulos (Metropoulos), Long Beach Dept of Pub Health (LBOPH) or State Department of Water Resources (SDWR), as indicated.

f Field pH except when noted with a





TABLE B-13

## ANALYSES OF SURFACE WATER

LOS ANGELES REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO3 Total in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO3)	Bicarbonate (HCO3)	Sulfate (SO4)	Chloride (Cl)	Nitrate (NO3)	Fluoride (F)							Boron (B)	Silica (SiO2)	Other constituents
1957							VENTURA RIVER NEAR VENTURA (Sta 61)																		
1/7 1305	0.4	52	6.6	60	1186	7.2						0	304		65			0.55			-5	DWR			
2/7 1215	0.8	53	11.5	106	1132	8.0						0	292		59			0.46			-5	DWR			
3/4 1330	10	63	9.0	92	892	8.2	94	34	48	2.3	0	286	169	44	2.0		0.40			20	DWR				
4/8 1200	1.9	65	14.0	147	1116	7.7	4.69	2.79	2.09	0.06	0	314	3.52	60	0.032		0.54			-5	DWR				
5/6 1400	2.9	68	13.0	142	1010	8.2	121	34	56	1.6	0	293	226	57	0.5		0.46	20		-5	DWR				
6/10 1330	0.2	72	13.0	147	1094	7.4	6.04	2.79	2.44	0.04	0	299	4.71	57	0.01	0.02	0.67			-5	DWR				
7/1 1345	Ponded	73	11.2	128	1166	7.5		0	312		0	312		57			0.53			-5	DWR				
8/5 1400	0.2	74	13.0	152	1088	8.1		0	259		0	259		58			0.54			-5	DWR				
9/3 1645	Ponded	73	11.4	131	1207	7.7	146	37	61	2.3	0	328	276	62	1.5	0.6	0.62	20	PO4 0.0	-5	DWR				
10/7 1345		77	2.0	24	1613	7.5	7.29	3.04	2.65	0.07	0	336	5.74	174	0.02	0.03	0.82			13	DWR				
Nov.	Dry																			Median 6.2					
12/16 1550	est 40	67	-	-	597	7.3	66	20	24	2.7	0	143	150	18	2.9	0.2	0	13		-	Max. 700 Min. 0				

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*





TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C) ±	Mineral constituents in parts per million										Total Dissolved solids in ppm (c)	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by e	
					Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents

1957	Average									AMERICAN RIVER AT FAIR OAKS (Sta. 22d)															USGS
1/1-10	1560			63.0	7.2 0.36	1.7 0.11	2.8 0.12		0 0.00	29 0.18								25			USGS				
1/11-20	980			66.0	7.0 0.35	1.8 0.15	2.7 0.12		0 0.00	29 0.18								25			USGS				
1/21-31	930			67.3	7.4 0.37	2.1 0.17	2.7 0.12		0 0.00	31 0.51								27			USGS				
2/1-24	1250			70.8	7.6 0.38	2.2 0.18	2.5 0.11		0 0.00	34 0.56								28	0		USGS				
2/25-28 3/1-4	4280 5750			65.3	7.4 0.37	2.8 0.23	2.4 0.10		0 0.00	30 0.19								30	5		USGS				
3/5-9	18,400			58.1	6.6 0.33	2.1 0.17	2.1 0.09		0 0.00	27 0.14								25	3		USGS				
3/10-31	4380			59.5	6.6 0.33	2.1 0.17	2.1 0.09		0 0.00	26 0.13								25	4		USGS				
4/1-12	2400			61.0	6.8 0.34	1.6 0.13	2.7 0.12		0 0.00	28 0.16								24			USGS				
4/13-26	3610			59.0	6.5 0.32	1.6 0.13	2.3 0.10		0 0.00	27 0.14								23			USGS				
4/27-30	4870			57.5	6.7 0.33	1.3 0.11	2.4 0.10		0 0.00	26 0.13								22			USGS				
5/1-13	1930			57.5	6.8 0.34	1.2 0.10	2.4 0.10		0 0.00	28 0.16								22			USGS				
5/14-19	4160			56.4	5.2 0.26	2.2 0.18	2.4 0.10		0 0.00	26 0.13								22	1		USGS				
5/20-31	9310			52.3	5.8 0.29	1.1 0.09	2.9 0.13		0 0.00	22 0.36							Fe 0.01 Al 0.02 Zn 0.12 a	19	1		USGS				
6/1-11	6310			50.2	4.8 0.24	1.7 0.11	2.3 0.10		0 0.00	24 0.39								19	0		USGS				
6/12-17	4260			52.1	4.8 0.24	1.8 0.15	2.5 0.11		0 0.00	25 0.14								20	0		USGS				
6/18-30	2790			51.8	5.0 0.25	1.7 0.11	2.4 0.10		0 0.00	24 0.39								20	0		USGS				

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LAOWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (SDWR), as indicated.

f Field pH except when noted with \*

TABLE B-14

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm (G)	Percent suspended in ppm	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
1957	Average									AMERICAN RIVER AT FAIR LAKE (Sta. 22d) (cont'd)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (OWR), as indicated.

f Field pH except when noted with \*

TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per-cent sodium in ppm	Hardness as CaCO <sub>3</sub> in ppm	Tur-bid-ity in ppm	Coliform MPN/ml	Analyzed by <sup>a</sup>
			ppm		Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-tro-ide (NO <sub>3</sub> )	Fluo-ride (F)	Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents			
1957	Not Avail-able																			
1-18 1335		49		77.2	7.2	3.5	2.5	0.0	0.0	27	6.7	3.6	0.0							USBR
6-17 1400		58		57	5.0	1.7	1.8	0.0	0.0	19	6.2	2.5	0.0							USBR
9-5 1100		64		60	6.0	1.3	1.6	0.0	0.0	28	3.4	2.8	0.6							USBR

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept of Pub Health (LADPH), Long Beach Dept of Pub Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated

<sup>f</sup> Field pH except when noted with \*

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm <sup>b</sup>	Percent Sodium in ppm	Hardness as CaCO <sub>3</sub> in ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			equivalents																			
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents <sup>a</sup>		
1957							AMERICAN RIVER AT SACRAMENTO (STA. 22)																			
1/11 1305	453	47	12.0	102	62.4	7.1	7.2 0.36	1.5 0.12	2.5 0.11	0.8 0.02	0.0 0.00	30 0.49		1.5 0.04			0.00					18	24	0	1.0	USGS
2/21 1710	713	51	12.8	114	67.6	7.1	7.4 0.37	2.1 0.17	2.7 0.12	0.8 0.02	0 0.00	33 0.54		2.0 0.06			0.04				18	27	0	0.8	USGS	
3/18 0740	7000	48	12.1	104	52.7	7.3	6.0 0.30	2.7 0.22	1.8 0.08	0.8 0.02	0 0.00	26 0.43		1.5 0.04			0.08				13	26	5	8	USGS	
4/17 1205	3950	53	10.5	96	56.7	7.3	8.1 0.40	2.1 0.17	2.0 0.09	0.6 0.02	0 0.00	32 0.52		1.3 0.04			0.00				13	28	2	3	USGS	
5/9 1510	1900	58	10.6	103	57.2	7.3	6.4 0.32	1.5 0.12	2.1 0.09	0.7 0.02	0 0.00	27 0.44		2.1 0.06			0.02		PO <sub>4</sub> 0.00 Fe 0.04 Al 0.04 Cu 0.03 Pb 0.01 Zn 0.05 <sup>a</sup>	41	16	22	0	5	USGS	
6/19 1240	2560	58	10.2	99	48.6	7.1	5.6 0.28	1.2 0.10	2.2 0.10	0.9 0.02	0 0.00	24 0.39		0.5 0.01			0.09				20	19	0	3	USGS	
7/12 0955	2880	62	9.3	95	49.7	7.1			2.0 0.09		0 0.00	23 0.38		0.5 0.01			0.17				16	23	4	6	USGS	
8/21 1345	3180	64	9.2	96	47.8	7.1			2.0 0.09		0 0.00	22 0.36		2.0 0.06			0.05				15	25	7	15	USGS	
9/23 1400	2400	66	8.5	91	48.3	7.1	5.9 0.29	1.1 0.09	1.8 0.08	0.9 0.02	0 0.00	22 0.36		1.9 0.05			0.00		PO <sub>4</sub> 0.00 Fe 0.01 Al 0.03 Zn 0.01 <sup>a</sup>	41	17	19	1	1	USGS	
10/21 1015	1420	63	8.6	89	58	7.1			2.2 0.10		0 0.00	32 0.52		2.0 0.06			0.04				17	24	0	1	Median 62 USGS	
11/27 1645	1020	55	10.2	96	65.6	7.1			2.6 0.11		0 0.00	32 0.52		2.5 0.07			0.00				15	30	4	5	Max. 7,000 USGS	
12/20 1330	1190	53	10.7	98	67.7	7.1			3.2 0.14		0 0.00	32 0.52		3.5 0.10			0.10				19	30	4	1	Min. 2.3 USGS	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>a</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								</

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with a

TABLE B-14

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million								Total Dissolved solids in ppm	Percent sodium Total ppm	Hardness as CaCO3 Total ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by				
			ppm	% Sol			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO3)	Bicarbonate (HCO3)	Sulfate (SO4)	Chloride (Cl)			Nitrate (NO3)	Fluoride (F)				Boron (B)	Silica (SiO2)	Other constituents	
1957						f																			
1/10 1030	65	37	13.9	103	145	7.5	16 0.80	5.4 0.44	4.0 0.17	0.5 0.01	0 0.00	67 1.10				4.8 0.14	0.01			USGS					
2/13 1118	133	51	12.2	109	134	7.5	13 0.65	5.7 0.47	4.2 0.18	0.7 0.02	0 0.00	57 0.93				4.5 0.13	0.00			USGS					
3/12 0820	898	51	11.6	104		7.3	Sample broken in transit																		USGS
4/8 1005	584	57	10.9	105	72.6	7.3	6.4 0.32	1.9 0.16	2.0 0.09	0.4 0.01	0 0.00	24 0.39				1.5 0.04	0.08			USGS					
5/6 1140	190	72	8.8	100	103	7.5	11 0.55	3.2 0.32	3.7 0.16	0.3 0.01	0 0.00	50 0.82	7.3 0.15			3.0 0.08	0.02	12 0.02	Cu 0.01 Zn 0.02 Pb 0.20 Fe 0.02 a	USGS					
6/10 1030	160	73	8.6	99	85.6	7.5	10 0.50	3.4 0.28	2.5 0.11	0.6 0.02	0 0.00	38 0.62				2.8 0.08	0.03			USGS					
7/18 0855	3.5	79	7.8	95	267	7.9		5.3 0.23			0 0.00	130 2.13				5.0 0.14	0.11			USGS					
8/12 0945	1.6	77	9.2	109	279	8.1		6.8 0.30			0 0.00	138 2.26				7.0 0.20	0.00			USGS					
9/16 0945	28	72	9.6	109	296	8.1	31 1.55	15 1.23	7.6 0.33	1.4 0.04	0 0.00	142 2.33	26 0.54			9.7 0.27	0.00	20 0.00	PO4 0.00 Al 0.04 a	USGS					
10/22 1020	31	61	10.1	102	218	7.9		6.7 0.29			0 0.00	116 1.90				6.5 0.18	0.04			USGS					
11/12 0945	48	55	10.2	96	203	7.5		6.8 0.30			0 0.00	96 1.57				8.2 0.23	0.02			USGS					
12/20 1440	550	50	11.2	99	96.8	7.3		3.1 0.13			0 0.00	37 0.61				3.0 0.08	0.00			USGS					

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

by gravimetric determination.

d. Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

The mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Conformity MPN/ml	Analyzed by			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents	Total	N.C.
1957																									
1/11 0850	48	36	13.4	98	206	7.7	16 0.80	8.3 0.68	17 0.74	2.3 0.06	0 0.00	110 1.80					0.15	74	0	0.4	USGS				
2/14 1400	129	49	11.9	104	156	7.8	11 0.55	8.1 0.67	9.8 0.43	0.8 0.02	0 0.00	85 1.39					0.02	61	0	0	USGS				
3/13 1000	362	46	12.5	105	86.8	7.3	9.5 0.47	3.5 0.29	4.3 0.19	0.4 0.01	0 0.00	46 0.75					0.00	38	0	1	USGS				
4/9 0830	96	53	10.8	99	146	7.9	13 0.65	5.7 0.47	8.2 0.36	0.7 0.02	0 0.00	80 1.31					0.16	56	0	0	USGS				
5/7 1020	93	61	9.7	98	134	7.6	12 0.60	5.1 0.42	8.2 0.36	0.9 0.02	0 0.00	74 1.21	1.5 0.03				0.03	51	0	0.4	USGS				
6/11 0940	57	65	9.5	100	144	7.9	13 0.65	6.2 0.51	8.2 0.36	0.8 0.02	0 0.00	82 1.34					0.04	58	0	0.3	USGS				
7/9 0740	33	71	8.5	96	184	7.9			14 0.61		0 0.00	101 1.66					0.19	69	0	0.9	USGS				
8/13 0735	26	65	8.7	92	200	8.0			14 0.61		0 0.00	107 1.75					0.17	86	0	0.7	USGS				
9/17 0830	27	64	8.9	93	211	7.9	16 0.80	8.0 0.66	15 0.65	1.6 0.04	0 0.00	108 1.77	4.6 0.10				0.17	73	0	2	USGS				
10/23 0850	45	56	10.0	95	188	7.7			9.6 0.42		0 0.00	97 1.59					0.03	71	0	1	USGS				
11/12 1545	43	50	11.1	98	200	7.7			13 0.57		0 0.00	103 1.69					0.14	74	0	1	USGS				
12/19 1540	375	48	11.7	101	94.3	7.3			4.6 0.20		0 0.00	43 0.79					0.00	48	9	1	USGS				

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination,

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (UGSQ), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

\* Field pH except when noted with a

TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
						equivalents																		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents
BURNLEY CREEK NEAR BURNLEY (STA. 17b)																								
1957																								
Jan.	Snowbound																							
Feb.	Snowbound																							
Mar.	Snowbound																							
4/10 1000	est. 110	55	10.9	102	58.5	7.3	6.4 0.32	2.2 0.18	2.5 0.11	0.5 0.01	0	38 0.62				0.0 0.00			18	25	0	0.6	USGS	
5/8 0940	est. 30	53	9.0	82	62.5	7.3	6.0 0.30	2.7 0.22	2.5 0.11	0.6 0.02	0	37 0.61	1.9 0.04			0.0 0.00	Fe 0.11 Al 0.29 Cu 0.01 Zn 0.01 PO <sub>4</sub> 0.05 a	54	17	26	0	5	USGS	
6/12 0715	est. 26	54	9.3	86	73.1	7.3	9.4 0.47	2.1 0.17	3.0 0.13	0.6 0.02	0	44 0.72				0.6 0.02			16	32	0	1.2	USGS	
7/10 0855	est 15	55	9.2	87	98.8	7.5		4.2 0.18			0	57 0.93				1.0 0.03			17	45	0	0.8	USGS	
8/14 0920	est. 16	56	9.1	86	105	7.3		6.0 0.26			0	67 1.10				1.5 0.04			22	46	0	0.6	USGS	
9/18 0815	est 20	55	8.8	83	112	7.3	14 0.70	3.6 0.30	4.8 0.21	1.5 0.04	0	71 1.16	1.9 0.04			1.0 0.03	PO <sub>4</sub> 0.05 Fe 0.05 a	96	17	50	0	1	USGS	
10/24 1140	est 55	50	10.0	88	91	7.3		3.4 0.15			0	58 0.95				0.7 0.02			16	39	0	1	Median 23	USGS
11/13 1440	est 110	46	9.8	82	91.6	7.1		4.3 0.19			0	55 0.90				0.0 0.00			18	42	0	39	Max. 2,400	USGS
Dec.	Snowbound																						Min. 0.06	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*



TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micrograms at 25°C)	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> Total ppm	Temporary Hardness in ppm	Coliform MPN/ml	Analyzed by	
			ppm	% Sat		equivalents per million																
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)
1957																						
1/10 1600	131	35	13.8	99	114	7.5	1.3 0.65	4.3 0.35	3.9 0.17	0.7 0.02	0 0.00	70 1.15				0.00		14	50	0	0.8	USGS
2/14 1500	220	50	12.0	106	109	7.9	8.8 0.44	6.6 0.54	4.2 0.18	0.6 0.02	0 0.00	68 1.11				0.00		15	49	0	1	USGS
3/12 1430	840	48	11.7	101	64.8	7.3	7.4 0.37	2.7 0.22	2.3 0.10	0.4 0.01	0 0.00	37 0.61				0.06		14	30	0	6	USGS
4/8 1605	345	54	10.7	99	81.7	7.5	8.6 0.43	3.0 0.25	2.6 0.11	0.6 0.02	0 0.00	45 0.74				0.08		14	34	0	0	USGS
5/7 0940	429	58	10.0	97	75.9	7.3	8.3 0.41	2.9 0.24	2.7 0.12	0.5 0.01	0 0.00	44 0.72				0.05		15	32	0	1	USGS
6/11 0845	315	59	10.0	99	80.9	7.5	10 0.50	2.9 0.24	2.9 0.13	0.6 0.02	0 0.00	48 0.79				0.02		15	37	0	0.8	USGS
7/8 1505	207	71	8.8	99	98.3	7.9			4.9 0.21		0 0.00	62 1.02				0.06		20	43	0	0.8	USGS
8/12 1600	138	67	9.1	98	109	7.9			6.4 0.28		0 0.00	62 1.02				0.00		21	53	2	1	USGS
9/16 1600	135	65	9.3	98	107	8.1	7.6 0.38	6.6 0.54	5.5 0.24	1.5 0.04	0 0.00	67 1.10				2.9 0.06		20	46	0	1	USGS
10/23 0800	161	52	10.3	93	109	7.5			3.6 0.16		0 0.00	67 1.10				0.00		14	51	0	2	USGS
11/12 1450	166	48	11.3	97	111	7.5			4.4 0.19		0 0.00	68 1.11				0.05		17	48	0	2	USGS
12/20 0800	581	48	11.4	98	97.5	7.2			3.8 0.17		0 0.00	46 0.75				0.00		15	50	12	1	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWRI), as indicated.

f Field pH except when noted with \*.



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm <sup>b</sup>	Percent Sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents
1957																									
Jan.	Not sampled																								
2/18 1410	48	60	11.5	115	968	8.1	50 2.50	43 3.52	91 3.96	3.1 0.08	0 0.00	303 4.97	145 4.09			5.0		39	301	53	1	USGS			
3/11 1230	426	55	10.5	99	459	8.1	28 1.40	23 1.86	33 1.44	1.6 0.04	0 0.00	186 3.05	42 1.18			1.7		30	163	10	18	USGS			
4/15 1240	340	61	10.2	103	511	8.3	30 1.50	27 2.26	36 1.57	2.4 0.06	0 0.00	221 3.62	42 1.18			1.6		29	188	7	8	USGS			
5/10 1300	655	66	9.5	101	367	8.3	26 1.30	20 1.63	21 0.91	2.1 0.05	0 0.00	184 3.02	15 0.31	20 0.56	1.1 0.02	0.1 0.01	11	209	146	0	10	USGS			
6/21 1440	394	80	8.4	105	328	8.4	28 1.40	16 1.35	17 0.74	2.5 0.06	0 0.00	176 2.88	15 0.42			1.2		21	137	0	16	USGS			
7/16 0930	402	75	8.2	96	321	8.1			16 0.70		0 0.00	174 2.85	22 0.62			1.1		20	142	0	8	USGS			
8/19 1305	300	76	8.3	98	332	8.2			18 0.78		0 0.00	178 2.92	14 0.39			1.1		21	149	3	7	USGS			
9/10 1315	209	78	8.2	99	357	7.7	26 1.30	19 1.56	20 0.87	2.6 0.07	0 0.00	186 3.05	11 0.23	18 0.51	0.9 0.01	0.0 0.00	5.1	196	143	0	6	USGS			
10/28 0945	115	58	9.5	94	766	8.2			69 3.00		0 0.00	276 4.52	104 2.93			3.1		39	235	9	5	USGS			
11/18 1330	86	53	11.0	100	663	8.1			56 2.44		7 0.23	232 3.80	86 2.43			2.8		36	217	15	0.8	USGS			
12/23 1430	655	45	11.6	96	339	8.0			25 1.09		0 0.00	143 2.34	31 0.87			1.0		31	120	3	65	USGS			

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as <sup>60</sup> except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14

ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm <sup>b</sup>	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents	Total ppm	N/C ppm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
1957										CACHE CREEK	NEAR LOWER LAKE (STA. 42)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBDPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-34  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by
			ppm	% Sol			equivalents																
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )			
1957							CACHE CREEK, NORTH FORK, NEAR LAKE (STA. 79)																
1/15 1140	274	43	11.9	96	332	7.9	21 1.05	17 1.41	22 0.96	1.0 0.03	0 0.00	146 2.39		31 0.87		2.5			28	123	3	20	USGS
2/19 1115	27	53	13.4	123	563	8.3	32 1.60	31 2.56	42 1.83	1.5 0.04	0 0.00	240 3.93		60 1.69		4.8			30	208	11	0	USGS
3/13 1700	510	54	10.6	98	218	8.1	17 0.85	11 0.89	11 0.48	0.8 0.02	0 0.00	112 1.84		8.5 0.24		0.63			21	87	0	30	USGS
4/16 1000	61	56	10.7	101	349	8.1	25 1.25	19 1.59	19 0.83	1.0 0.03	0 0.00	181 2.97		19 0.54		1.6			22	142	0	2	USGS
5/13 1500	90	66	9.8	104	351	8.4	26 1.30	19 1.60	20 0.87	0.9 0.02	11 0.37	162 2.66	12 0.25	20 0.56	0.1 0.01	1.7	15	Al 0.06 Pb 0.01 PO <sub>4</sub> 0.00 Fe 0.01 Zn 0.02 a	206	23	0	0.9	USGS
6/21 0840	28	72	8.7	99	402	8.3	30 1.50	21 1.74	23 1.00	1.4 0.04	8 0.27	190 3.11		26 0.73		2.3		Tot. Alk. 206	23	162	0	0.3	USGS
7/15 1210	8	83	11.0	139	437	8.3		25 1.09		15 0.50	182 2.98			26 0.73		2.6		Tot. Alk. 212	24	172	0	0.8	USGS
8/20 1000	3	76	9.8	115	485	8.3		32 1.39		10 0.33	201 3.29			43 1.21		2.8		Tot. Alk. 221	27	189	8	0.4	USGS
9/11 1145	1.0	80	11.1	136	403	8.4	31 1.55	27 2.21	33 1.44	2.1 0.05	13 0.43	199 3.26	9.6 0.20	47 1.33	0.1 0.00	2.0	22	PO <sub>4</sub> 0.05 Al 0.05 Pb 0.01 a Tot. Alk. 225	285	27	4	2	USGS
10/16 1000	117	59	9.4	93	416	8.1		25 1.09		0 0.00	198 3.25			36 1.02		3.0			26	159	0	2	USGS
11/19 1105	70	53	12.0	109	436	8.3		29 1.26		0.30	183 3.00			37 1.04		2.9		Tot. Alk. 201	27	165	1	0.6	USGS
12/18 1450	1600	49	10.8	94	181	7.9		8.7 0.38		0 0.00	98 1.61			9.0 0.25		0.53			20	76	0	150	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-11i

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
1957	Tidal																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by a
					equivalents per million															
					Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)						
1957																				
1/14 1110	144	47	240	7.7	29 1.45	8.3 0.68	7.7 0.33	1.4 0.04	0 0.00	126 2.07			7.4 0.21			0.06	107	4	7	USGS
2/13 1105	97	51	209	7.7	24 1.20	7.9 0.65	7.2 0.31	1.2 0.03	0 0.00	104 1.70			7.5 0.21			0.00	92	7	8	USGS
3/11 1145	31	57	203	7.5	18 0.90	11 0.92	7.1 0.31	1.5 0.04	0 0.00	105 1.72			4.5 0.13			0.12	91	5	5	USGS
4/15 1210	14	64	191	8.1	21 1.05	8.5 0.70	6.1 0.27	1.3 0.03	0 0.00	101 1.66			4.5 0.13			0.06	88	5	1	USGS
5/7 1010	12	66	184	7.3	21 1.05	6.9 0.57	5.9 0.26	1.3 0.03	0 0.00	98 1.61	9.6 0.20	3.5 0.10	0.4 0.01			0.00 0.00	81	1	1	USGS
6/17 1005	207	61	170	7.9	20 1.00	6.3 0.52	5.2 0.23	1.2 0.03	0 0.00	92 1.51			2.5 0.07			0.07	76	1	2	USGS
7/17 0830	180	71	191	7.9			6.1 0.27		0 0.00	102 1.67			3.4 0.10			0.14	90	6	4	USGS
8/19 1045	128	72	209	7.9			7.3 0.32		0 0.00	121 1.98			4.5 0.13			0.00	102	3	6	USGS
9/10 1113	No Flow	76	254	7.3	29 1.45	10 0.86	8.1 0.35	2.3 0.06	0 0.00	136 2.23	11 0.23	7.0 0.20	0.5 0.01	0.5 0.00		0.00 0.00	116	4	0.5	USGS
10/22 1215	1.9	63	288	7.3			8.0 0.35		0 0.00	150 2.46			8.0 0.23			0.06	130	7	1	USGS
11/27 1125	16	51	292	7.9			11 0.46		0 0.00	134 2.20			12 0.34			0.00	128	18	2	USGS
12/11 1145	21	47	283	7.7			10 0.44		0 0.00	131 2.15			12 0.34			0.00	121	14	7	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (microhm/cm at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Hardness as CaCO <sub>3</sub>	Turbidity in ppm	Coliform MPN/ml	Analyzed by
						equivalents														
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)					
1957																				

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH).

f Long Beach Dept of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

† Field pH except when noted with \*

TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents		
																								Total	N.C.
1957																									
1/15 1310		45	11.5	95	249	7.7	21 1.05	14 1.19	9.6 0.42	1.9 0.05	0 0.00	141 2.31		5.5 0.16		0.81			15	112	0	35	USGS		
2/19 1245		52	13.9	126	254	8.2	22 1.10	15 1.20	9.8 0.43	1.8 0.05	0 0.00	146 2.39		5.0 0.14		0.71			15	115	0	5	USGS		
3/14 0845		51	9.9	88	240	7.7	21 1.05	13 1.11	9.0 0.39	1.8 0.05	0 0.00	133 2.18		5.0 0.14		0.75			15	108	0	24	USGS		
4/16 1145		57	10.0	96	238	8.1	20 1.00	14 1.16	9.0 0.39	1.7 0.04	0 0.00	135 2.21		5.0 0.14		0.67			15	108	0	1	USGS		
5/14 0715		59	8.1	80	241	7.7	22 1.10	13 1.06	9.4 0.41	1.7 0.04	0 0.00	140 2.29	7.7 0.16	5.0 0.14	0.6 0.01	0.81	10	Al 0.11 Cu 0.01 Pb 0.05 Fe 0.03 Zn 0.03	139	16	108	0	8	USGS	
6/21 0630		68	5.7	62	247	7.5	22 1.10	13 1.07	9.8 0.43	2.3 0.06	0 0.00	140 2.29		5.0 0.14		0.82			16	108	0	15	USGS		
7/15 1515		80	6.9	85	256	7.9			10 0.44		0 0.00	145 2.38		5.8 0.16		0.77			16	114	0	17	USGS		
8/20 1140		73			268	7.9			11 0.48		0 0.00	150 2.46		6.0 0.17		0.83			16	124	1	10	USGS		
9/11 1345		78	8.2	99	281	8.2	24 1.20	14 1.17	11 0.48	2.5 0.06	0 0.00	155 2.54	11 0.23	7.3 0.21	2.7 0.04	0.1 0.01	0.73	14	As 0.01 Pb 0.50 Fe 0.01 Al 0.10 Zn 0.01	163	16	119	0	9	USGS
10/16 0800		60	8.2	82	271	7.9			12 0.52		0 0.00	150 2.46		7.0 0.20		0.82			17	125	2	20	Median 2.3 USGS		
11/19 1250		54	9.5	88	278	7.9			11 0.48		0 0.00	155 2.54		7.0 0.20		0.88			16	126	0	20	Max. 620 USGS		
12/18 1305		49	9.8	85	252	7.7			11 0.48		0 0.00	139 2.28		6.5 0.18		0.78			17	115	1	10	Min. 0.045 USGS		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH).

f Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

g Field pH except when noted with \*

CENTRAL VALLEY REGION

† Field pH except when noted with a

TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per-cent sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
						equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potos-ium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-trate (NO <sub>3</sub> )	Fluo-ride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
1957	Average																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents.

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR) as indicated.

<sup>f</sup> Field pH except when noted with \*.



TABLE B-14

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent solum	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a	
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957							COSUMES RIVER NEAR NICHIGAN BAR (STA. 94)																	
1/14 0830	407	45	12.5	103	107	7.3	10 0.50	4.6 0.38	4.3 0.19	1.1 0.03	0 0.00	52 0.85					0.00			17	44	1	8	USGS
2/13 0845	254	49	11.2	98	86.8	7.7	8.4 0.42	4.1 0.34	3.9 0.17	1.0 0.03	0 0.00	41 0.67					0.00			18	38	4	9	USGS
3/11 0900	1500	48	12.2	105	63.9	7.5	6.4 0.32	2.4 0.20	2.7 0.12	0.8 0.02	0 0.00	32 0.52					0.00			18	26	0	2	USGS
4/15 0955	794	54	10.5	98	74.1	7.3	7.6 0.38	2.7 0.22	3.1 0.13	0.9 0.02	0 0.00	39 0.64					0.01			17	30	0	7	USGS
5/7 0735	412	62	9.7	99	55.5	7.3	6.0 0.30	1.5 0.12	2.6 0.11	0.8 0.02	0 0.00	28 0.46					0.02	Al 1.03 PO <sub>4</sub> 0.00 Zn 0.09 Fe 0.03	46	20	21	0	1	USGS
6/17 0820	176	67	9.3	100	63.6	7.3	6.4 0.32	1.9 0.16	2.9 0.13	1.1 0.03	0 0.00	31 0.51					0.03		20	20	24	0	1	USGS
7/17 025	45	82	8.3	104	68.1	7.9			3.5 0.15		0 0.00	38 0.62					0.00		19	19	33	2	0.7	USGS
8/19 0823	16	73	7.9	91	87.7	7.9		4.4 0.19			0 0.00	44 0.72					0.00		21	21	35	0	0.6	USGS
9/13 0929	13	70	8.6	95	100	8.1	9.6 0.48	3.8 0.31	5.1 0.22	1.8 0.05	0 0.00	55 0.90					0.00	PO <sub>4</sub> 0.05 Al 0.14	70	21	39	0	.4	USGS
10/22 0910	32	59	9.8	96	87	7.7			3.8 0.17		0 0.00	50 0.82					0.00		19	19	37	0	2	USGS
11/27 1520	48	49	12.1	105	77.8	7.4			3.7 0.16		0 0.00	41 0.67					0.00		21	21	31	0	0.5	USGS
12/11 0925	44	44	11.9	97	86.6	7.3			4.0 0.17		0 0.00	40 0.66					0.02		20	20	34	1	15	USGS

00	except as shown.
200	

Determined by addition of analyzed constituents.

c. Gravimetric determination.

Annual median and range, respectively Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

Annual mean and range, respectively calculated from analyses of duplicate monthly samples made by Coll. Dept. of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), (LADWP).

Long Beach Dept of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

Field pH except when noted with a



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per- cent solum	Hardness as CaCO <sub>3</sub>		Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by a	
			ppm	% Sat			Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Corbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fure (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- tro- (NO <sub>3</sub> )	Fluo- ride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957																								
Jan.	not sampled																							
2/14 1145	297	53	11.0	100	303	7.7	28 1.40	13 1.09	15 0.65	0.9 0.02	0 0.00	132 2.16	22 0.62			0.05			21	124	16	3	USGS	
3/13 1300	1580	49	12.0	104	209	7.7	20 1.00	10 0.82	7.9 0.34	1.1 0.03	0 0.00	108 1.77	4.6 0.13		0.07			16	91	2	50	USGS		
4/9 1330	460	63	9.8	101	233	7.7	25 1.25	11 0.90	8.1 0.35	0.9 0.02	0 0.00	122 2.00	7.3 0.21		0.02			14	107	7	2	USGS		
5/7 1345	550	62	8.4	86	218	7.8	23 1.15	9.4 0.77	7.9 0.34	0.9 0.02	0 0.00	114 1.87	9.6 0.20	7.0 0.20	0.4 0.01	0.0 0.00	18 0.00	Pe 0.02Al 0.16 Cu 0.01Zn 0.02 PO <sub>4</sub> 0.05 a	132	15	96	3	2	USGS
6/11 1540	100	79	8.2	100	204	7.9	23 1.15	9.4 0.77	6.6 0.29	1.0 0.03	0 0.00	109 1.79	6.1 0.17		0.14			13	96	7	10	USGS		
7/9 1155	136	79	9.4	114	211	7.7			8.2 0.36		0 0.00	119 1.95	6.1 0.17		0.03			16	92	0	2	USGS		
8/13 1550	62		8.7		196	7.3			8.7 0.36		0 0.00	111 1.82	5.0 0.14		0.02			17	91	0	1	USGS		
9/17 1350	80	73	9.4	108	190	7.3	17 0.85	8.8 0.72	8.7 0.36	1.7 0.04	0 0.00	104 1.70	5.8 0.12	6.4 0.18	0.5 0.01	0.0 0.00	31 0.00	PO <sub>4</sub> 0.10 Pe 0.01 Al 0.04 a	131	19	78	0	2	USGS
10/23 1630	174	58	9.4	91	248	7.3			9.2 0.04		0 0.00	120 1.97	13 0.37		0.01			16	105	7	5	Median 62	USGS	
11/13 1230	295	54	9.9	92	261	7.5			10 0.44		0 0.00	130 2.13	15 0.42		0.00			16	112	5	2	Max. 7000	USGS	
12/19 0845	1390	46	11.5	96	221	7.7			9.0 0.39		0 0.00	108 1.77	7.0 0.20		0.20			17	98	9	40	Min. 0.045	USGS	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

CENTRAL VALLEY REGION

† Field pH except when noted with a

TABLE B-14

## CENTRAL VALLEY REGION

[illegible]

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

Determined by addition of analyzed constituents.

Gravimetric determination.

d Annual median and range, respectively Calculated from onalyses of duplicate monthly samples made by Colif. Dept of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropo-

Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

Field pH except when noted with #



TABLE B-14

ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
1957	NOT RATED																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														</

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH),

f Long Beach Dept. of Public Health (LBDPH) or State Department of Water Resources (DWR), as indicated

g Field pH except when noted with e

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Permeability (Darcy)	Hardness as CaCO <sub>3</sub> ppm	Turbidity (NTU)	Analyzed by			
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)						Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents
1957																								
1/15 1145	0	51	10.9	98	658	7.7	34 1.70	14 1.18	73 3.18	2.3 0.06	0 0.00	115 1.88	112 3.16		0.23									
2/14 1150	860	55	9.5	89	800	7.5	39 1.95	19 1.57	91 3.96	3.0 0.08	0 0.00	135 2.21	134 3.78		0.38									
3/12 1200	865	60	8.7	87	701	7.5	37 1.85	16 1.35	77 3.35	3.5 0.09	0 0.00	119 1.95	115 3.24		0.11									
4/16 1245	2595	63	8.0	83	425	7.3	26 1.30	12 1.02	38 1.65	2.3 0.06	0 0.00	81 1.33	60 1.69		0.15									
5/8 1027	2590	68	7.5	82	441	7.3	27 1.35	11 0.90	43 1.87	2.4 0.06	0 0.00	92 1.51	68 1.92	0.1 0.01	0.12	16	Al 0.07 PO <sub>4</sub> 0.20 Zn 0.02 Fe 0.03		250					
6/18 0835	4160	71	8.9	100	324	7.7	21 1.05	6.9 0.57	32 1.39	2.2 0.06	0 0.00	80 1.31	46 1.30		0.20									
7/16 0815	3390	77	7.0	84	213	7.3			18 0.78		0 0.00	67 1.10	22 0.62		0.00									
8/20 1300	2556	74	7.1	82	755	8.1			82 3.57		0 0.00	147 2.41	134 3.78		0.16									
9/11 1452	860	75	7.8	91	424	7.7	19 0.95	11 0.94	45 1.96	2.9 0.07	0 0.00	92 1.51	68 1.92	0 0.00	0.14	16	PO <sub>4</sub> 0.20 Al 0.10 Fe 0.05		235					
10/23 1020	865	62	8.9	91	558	7.7			58 2.52		0 0.00	110 1.80	91 2.57		0.19									
11/26 0825	860	53	8.3	76	502	7.3			54 2.35		0 0.00	92 1.51	82 2.31		0.12									
12/12 1105	0	49	8.7	76	481	7.3			52 2.26		0 0.00	86 1.41	79 2.23		0.25									

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (microhm/cm at 25°C)	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent solid in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
					Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents
1957	AVERAGE									DELTA-MENDOTA CANAL NEAR TRACY (STA. 93)									U.S.G.S.				
1/5	219	7.7		638	32 1.66	11 1.16	70 3.01	2.6 0.07	0 0.00	113 1.85	56 1.17				0.36			370	52	138	15		
1/20	250	7.0		719	36 1.79	17 1.10	98 3.83	2.1 0.07	0 0.00	123 2.02	65 1.35				0.17			1,137	51	160	59		
2/2 - 8-12	2150	7.5		825	11 2.05	20 1.61	93 1.05	3.6 0.09	0 0.00	131 2.20	83 1.73	138 3.89	1.3 0.01	0.0 0.00	0.17	27	Fe 0.01	1,193	52	193	73		
2/16 - 28	870	7.6		828	11 2.05	20 1.63	93 1.05	3.1 0.09	0 0.00	136 2.23	80 1.67	139 3.92	3.5 0.01	0.0 0.00	0.12	27	Fe 0.00	1,182	52	181	72		
3/1 - 7	2500	7.6		930	51 2.51	26 2.11	97 1.22	3.6 0.09	0 0.00	136 2.23	102 2.12	151 1.31	5.7 0.03	0.3 0.02	0.35	28	Fe 0.00	571	17	231	122		
3/8 - 17	930	7.1		685	36 1.76	18 1.18	73 3.18	3.1 0.09	0 0.00	123 2.02	63 1.31	111 3.13	3.3 0.05	0.3 0.02	0.31	21	Fe 0.02	1,108	19	161	63		
3/18 - 29	1880	7.7		450	25 1.25	12 0.97	10 2.00	2.1 0.05	0 0.00	89 1.46	10 0.83	70 1.97	1.9 0.03	0.2 0.01	0.18	18	Fe 0.01	266	17	111	38		
3/31	2352	7.7		664	35 1.75	19 1.35	68 2.96	2.8 0.07	0 0.00	106 1.71	73 1.52				0.26			1,100	17	165	68		
4/1 - 8	2560	6.8		725	42 2.10	18 1.32	72 3.13	2.1 0.01	0 0.00	104 1.70	88 1.73	112 3.16	3.7 0.01	0.1 0.02	0.10	25	Fe 0.00	1,118	16	191	96		
4/9 - 19	2670	6.8		477	29 1.15	13 1.07	11 1.91	2.3 0.06	0 0.00	93 1.36	55 1.15	70 1.97	1.3 0.03	0.1 0.02	0.27	22	Fe 0.02	289	12	127	59		
4/20 - 24	1170	6.8		734	42 2.10	18 1.16	75 3.26	2.8 0.07	0 0.00	125 2.06	60 1.25	129 3.61	1.6 0.03	0.1 0.02	0.32	25	Fe 0.04	1,153	17	178	76		
4/25 - 30	1900	7.1		464	27 1.35	11 1.17	11 1.91	2.9 0.07	0 0.00	97 1.13	40 0.81	66 1.86	2.7 0.01	0.3 0.02	0.20	23	Fe 0.01	310	12	126	55		
5/1 - 19	2360	7.1		352	22 1.10	10 0.72	31 1.35	2.6 0.07	0 0.00	30 1.31	26 0.51	48 1.35	1.6 0.03	0.2 0.01	0.05	19	Fe 0.07 Al 0.16 Cu 0.01 (a)	222	10	96	30		
5/20 - 22	1660	7.6		596	31 1.77	11 1.19	63 2.71	3.6 0.09	0 0.00	110 2.29	38 0.79	100 2.82	2.1 0.03	0.2 0.01	0.30	21	Fe 0.01	352	18	111	29		
5/23 - 31	1780	7.1		275	17 1.15	7 0.51	27 1.17	2.7 0.06	0 0.00	71 1.16	16 0.33	37 1.01	1.9 0.03	0.2 0.01	0.11	21	Fe 0.03	161	15	68	10		
6/1 - 6	2700	7.1		291	1 0.70	6 0.51	26 1.13	2.6 0.06	0 0.00	73 1.20	12 0.25	12 1.13	2.1 0.03	0.2 0.01	0.09	11	Fe 0.02	160	13	72	12		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH), or State Division of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-111

## ANALYSES OF SURFACE WATER

Central Valley Region

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (microhmhos at 25°C)	Mineral constituents in parts per million										Total dissolved solids in ppm (c)	Per cent suspended in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by
					Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)	Baron (B)	Silica (SiO <sub>2</sub> )	Other constituents			
1957	AV. 6.35 TOTAL DAILY																			U.S.D.S.
6/7 - 11	3110	7.0	158	7.0	10 0.55	4.1 0.31	13 0.57	1.3 0.05	0 0.00	46 0.75	1.8 0.12	21 0.59	1.8 0.03	1.0 0.00	0.18	18	Fe 0.01	100	39	4
6/15 - 30	3380	7.4	296	7.4	18 0.70	4.0 0.66	26 1.13	2.4 0.07	0 0.00	76 1.25	1.6 0.20	14 0.24	1.6 0.03	1.1 0.01	1.02	19	Fe 0.05	176	41	16
7/1 - 3	3530	7.0	232	7.0	14 0.70	7.1 0.55	19 0.83	2.2 0.06	0 0.00	64 1.05	2.6 0.20	29 0.72	1.3 0.03	1.1 0.01	1.08	16	Fe 0.10	130	38	12
7/4	3520	7.2	607	7.2	30 1.30	12 1.53	63 2.71	2.9 0.10	0 0.00	116 1.90	4.6 0.76	100 2.42	1.5 0.02		0.11			384	46	59
7/11 - 31	3460	6.8	252	6.8	14 0.70	9.5 0.73	22 0.96	2.1 0.05	0 0.00	70 1.15	2.5 0.52	27 0.76	1.5 0.02	1.1 0.01	1.03	18	Fe 0.17	114	39	17
8/1 - 16	3280	7.1	378	7.1	17 0.75	13 1.07	38 1.65	2.6 0.07	0 0.00	85 1.39	2.5 0.52	59 1.66	1.4 0.02	1.2 0.01	0.07	18	Fe 0.03	201	45	26
8/17 - 19	3040	7.1	640	7.1	23 1.10	21 1.72	66 2.77	3.5 0.09	0 0.00	122 2.70	4.2 0.37	111 3.13	1.7 0.03	1.2 0.01	1.11	19	Fe 0.01	347	47	56
9/20 - 28	2840	7.4	398	7.4	14 0.90	11 0.70	34 1.70	2.4 0.07	0 0.00	11 1.11	1.5 0.33	11 1.16	1.7 0.03	1.2 0.01	1.11	17	Fe 0.01	221	48	18
9/20 - 9/2	2360	7.5	634	7.5	32 1.60	11 1.26	66 2.77	3.7 0.09	0 0.00	122 2.00	3.4 0.71	111 3.13	2.6 0.01	1.2 0.01	1.22	19	Fe 0.19	349	49	44
9/3 - 10	1840	7.0	468	7.0	19 0.95	11 0.89	40 1.71	2.5 0.06	0 0.00	11 1.11	1.5 0.31	11 1.16	1.5 0.02	1.1 0.01	1.00	17	Fe 0.18	225	48	20
9/11 - 19	1730	7.3	71	7.3	39 1.95	17 1.43	73 3.39	4.3 0.11	0 0.00	116 2.39	4.0 0.53	130 3.67	2.1 0.3	1.2 0.01	1.23	21	Fe 0.12	447	49	49
9/20 - 30	1980	7.1	610	7.1	30 1.50	17 1.10	42 3.00	4.0 0.10	0 0.00	137 2.26	3.0 0.75	102 2.43	1.1 0.02	1.3 0.02	1.20	23	Fe 0.02 and 0.01 Al 0.13 Cu 0.01 (a)			
10/1 - 10	1710	7.3	455	7.3	29 1.45	14 1.19	59 2.57	3.5 0.09	0 0.00	126 2.37	3.6 0.75	11 2.18	1.7 0.03	1.2 0.01	1.10	26	Fe 0.03	320	48	29
10/11 - 20	880	7.3	593	7.3	31 1.55	14 1.15	66 2.77	3.7 0.09	0 0.00	125 2.05	4.1 0.75	26 2.71	1.3 0.07	1.1 0.01	1.17	21	Fe 0.04	313	51	33
10/21 - 31	570	7.2	603	7.2	31 1.55	14 1.15	66 2.77	3.7 0.09	0 0.00	125 2.05	4.1 0.75	26 2.71	1.3 0.07	1.1 0.01	1.17	22	Fe 0.00	317	50	43

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as 1000 except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and ranges, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH), or State Division of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

Division of Laboratory Services  
 Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH)  
 Division of Laboratory Services  
 Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH)  
 Division of Laboratory Services  
 Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH)

TABLE B - 11  
 ANALYSES OF SURFACE WATER  
 Central Valley Region

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total dissolved solids in ppm (c)	Per cent sodium in ppm	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by e
			ppm		Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents			
1957	AV. GATE																			U.S.C.S.
11/1 - 9	1110			623	32 1.60	11 1.17	68 2.95	3.3 1.06	0 1.06	114 1.7	118 1.17	102 1.17	3.0 1.05	1.2 1.01	0.29	23	Fe .01	139	46	
11/10 - 20	190			506	25 1.25	11 0.93	53 2.31	2.5 1.06	0 1.06	90 1.17	32 0.27	15 2.10	2.7 0.94	0.2 0.01	0.18	19	Fe .00	109	35	
11/21 - 30	400			493	25 1.25	11 0.91	51 2.35	2.4 1.06	0 1.06	8 1.14	26 0.27	90 2.14	2.5 0.94	1.1 0.01	0.11	17	Fe .00	114	36	
12/1 - 13	170			516	26 1.30	11 1.11	55 2.39	2.7 1.07	0 1.06	92 1.51	114 0.92	10 2.26	1.3 0.93	0.1 0.00	0.21	21	Fe .01	122	47	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH), or State Division of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-174

[illegible]

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b. Determined by addition of analyzed constituents

Gravimetric determination.

Annual median and range respectively. Calculated from analyses of duplicate methods.

a Mineral analyses made by IISGS, Quality of Water Branch (IISGS) Pacific Chemical Consultant (PCC) West Coast Division, Division of Public Health, Dept of Public Health, Division of Laboratories.

Long Beach Dept of Pub Health (LRPH) or United States Dept of Health & Human Services (HHS) for more information.

\* Attention please: we have placed a



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>
			ppm	% Sat		Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )					
1957	Tidal																					
5-29 0935		64			176																	USBR
6-28 1150		76			175																	USBR
8-1 1145		74			536																	USBR
8-29 1030		70			522																	USBR
10-3 1440		--			247																	USBR
FALSE RIVER AT REEB PUMP (Sta. 112a)																						

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-118  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sulfate in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by	
						equivalents per million																
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)
Mean Daily																						
1/5/7																						
1/10 0935	3210	37	13.0	96	135	7.3	14 0.70	4.6 0.38	5.8 0.25	1.0 0.03	0 0.00	74 1.21		2.2 0.06		0.00		18	54	0	2	USGS
2/13 1030	3520	48	12.1	104	122	7.5	12 0.60	4.9 0.40	5.4 0.23	1.0 0.03	0 0.00	67 1.13		2.0 0.08		0.03		18	50	0	5	USGS
3/11 0900	23,000	51	11.4	102	7.6	7.4	6.4 0.52	3.6 0.28	2.4 0.10	2.2 0.09	0 0.00	26 0.53		0.4 0.01		0.00		14	21	1	30	USGS
4/2 0900	8360	55	10.3	97	78.5	7.4	8.8 0.44	3.4 0.28	3.1 0.13	0.8 0.02	0 0.00	141 0.72		1.4 0.04		0.01		15	36	0	14	USGS
5/6 0950	8700	64	9.2	96	80.2	7.3	8.6 0.43	2.3 0.19	2.8 0.12	0.5 0.01	0 0.00	44 0.72	1.0 0.02	0.5 0.01	0.3 0.00	0 0.00		16	31	0	7	USGS
6/10 0815	6610	64	9.0	94	75.4	7.3	8.7 0.43	3.0 0.25	3.0 0.13	0.6 0.02	0 0.00	32 0.64		1.8 0.05		0.01	Fe 0.06 Al 0.05 <sup>a</sup> Zn 0.01 PO <sub>4</sub> 0.05 <sup>a</sup>	16	34	2	30	USGS
7/8 0800	1000	78	7.4	89	147	7.7												15	73	4	20	USGS
8/12 0835	807	76	7.6	90	139	7.7												15	63	1	3	USGS
9/16 0845	2090	71	9.1	102	126	7.7	14 0.70	4.1 0.34	5.5 0.24	2.1 0.03	0 0.00	72 1.18	2.9 0.06	2.4 0.07	1.6 0.03	0 0.00	PO <sub>4</sub> 0.05 <sup>a</sup>	18	52	0	8	USGS
10/22 0900	3380	57	10.0	96	125	7.5												16	55	0	5	USGS
11/12 0900	3240	53	10.7	97	117	7.5												16	56	0	5	USGS
12/23 0850	13,800	45	11.5	95	80	7.2												18	36	6	20	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e

Field pH except when noted with \*



TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm (c)	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by	
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potassium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-trate (NO <sub>3</sub> )	Fluo-ride (F)			Baron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957	Average																						
10/15-17	Mean																						USGS
	Daily																						
	44170			119	7.2	11 0.55	5.0 0.41	4.8 0.21	1.5 0.04	0 0.00	4.4 1.03	3.5 0.10	0.8 0.01	0.0 0.00	0.00	0.00	16	Fe 0.01	90	17	48	0	USGS
10/18-24	3520			215	7.4	24 1.20	9.6 0.79	4.9 0.21	1.8 0.05	0 0.00	8.3 1.98	3.8 0.11	0.5 0.01	0.0 0.00	0.01	0.00	18	Fe 0.00	133	9	100	1	USGS
10/25-28	4190			134	7.2	13 0.65	4.9 0.40	5.0 0.22	1.4 0.04	0 0.00	4.8 1.08	6.4 0.18	0.2 0.00	0.0 0.00	0.00	0.00	16	Fe 0.00	96	17	52	0	USGS
10/29-31 11/1-2	3560			170	7.4	18 0.90	6.6 0.54	5.0 0.22	1.5 0.04	0 0.00	4.4 1.31	11 0.31	0.1 0.00	0.0 0.00	0.01	0.00	15	Fe 0.00	118	13	72	6	USGS
11/1-14	3200			157	7.1	16 0.80	6.0 0.49	4.8 0.21	1.6 0.04	0 0.00	4.8 1.29	5.7 0.16	1.3 0.02	0.0 0.00	0.00	0.00	16	Fe 0.01	101	14	64	0	USGS
11/15	3000			114	7.1	10 0.50	4.4 0.36	4.6 0.20		0 0.00	58 0.95								94	19	43	0	USGS
11/16-17	4100			93.5	7.1	8.7 0.43	3.5 0.29	3.2 0.14	1.3 0.03	0 0.00	5.2 0.64	3.7 0.10	1.7 0.03			0.00	12		80	16	36	4	USGS
11/18-30	3760			111	6.9	11 0.55	6.0 0.49	3.7 0.16		0 0.00	58 0.95								74	12	52	4	USGS
12/1-17	4260			120	6.7	12 0.60	5.4 0.44	4.2 0.18		0 0.00	61 1.00								78	15	52	2	USGS
12/18-19	47,900			80.7	6.9	7.6 0.38	5.4 0.44	2.9 0.13		0 0.00	35 0.57								68	14	44	12	USGS
12/20-31	9520			95.6	6.7	8.8 0.44	4.4 0.36	3.3 0.14		0 0.00	44 0.72								62	15	40	4	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (OWR), as indicated.

f Field pH except when noted with \*



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (microhm/cm at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )					
1957																					
Jan.	Snowbound																				
Feb.	Snowbound																				
Mar.	Snowbound																				
4/11 1045	794	47	10.5	89	90.8	7.3	10 0.50	3.2 0.26	4.4 0.19	1.1 0.03	0	56 0.92	0	0	0.00	0.00	19	38	0	12	USGS
5/9 0850	798	49	9.8	86	85.5	7.2	9.8 0.49	2.8 0.23	3.8 0.17	0.8 0.02	0	49 0.80	0.5 0.01	0.1 0.000	0.2 0.01	0.06	22	36	0	5	USGS
6/13 0825	305	60	8.4	84	114	7.1	14 0.70	3.2 0.26	5.1 0.22	1.1 0.03	0	67 1.10	1.8 0.05	0	0.03	0.03	18	48	0	4	USGS
7/11 0830	31	65	7.2	76	206	6.8		11 0.48		0	122 2.00	3.0 0.08	3.0 0.08	0.27	0.27	0.27	22	87	0	0.8	USGS
8/15 0915	39	59	7.6	75	270	6.7		15 0.65		0	154 2.52	7.0 0.20		0.08	0.08	0.08	23	112	0	0.8	USGS
9/19 0945	24	62	8.3	84	241	6.8	28 1.40	6.6 0.54	1.3 0.57	2.2 0.06	0	135 2.21	7.7 0.16	0.4 0.01	0.0 0.00	0.00	22	97	0	5	USGS
10/25 1000	125	52	9.1	82	167	7.1		7.7 0.33		0	93 1.52	3.5 0.10		0.03	0.03	0.03	20	66	0	5	USGS
11/14 1530	528	46	9.7	81	118	7.3		6.0 0.26		0	62 1.02	1.0 0.03		0.00	0.00	0.00	20	52	1	54	USGS
Dec.	Snowbound																				

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with e

TABLE B-14  
ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957	NOT RATED	51	9.6	86	1060	8.1	54 2.69	30 2.47	122 5.31	2.4 0.06	0	240 3.93		145 4.09			1.9			50	258	61	30	USGS
1/15 1415		57	9.4	90	1050	7.5	49 2.45	29 2.35	130 5.66	2.6 0.07	0	177 2.90		174 4.91			1.2			54	240	95	35	USGS
2/14 1420		57	10.0	96	1460	8.0	74 3.69	44 3.61	171 7.44	3.6 0.09	0	274 4.49		242 6.82			2.0			50	365	140	17	USGS
4/16 1450		63	7.8	81	403	7.3	24 1.20	13 1.04	35 1.52	2.1 0.05	0	82 1.34		55 1.55			0.21			40	112	45	35	USGS
5/8 1400		68	7.1	78	350	7.3	22 1.10	9.7 0.80	33 1.44	1.8 0.05	0	82 1.34	36 0.75	46 1.30	1.4 0.02	0.2 0.01	0.26	1.9	Al 0.20 PO <sub>4</sub> 0.20 P <sub>2</sub> 0.17	42	95	28	40	USGS
6/18 1045		74	6.5	75	333	7.3	20 1.00	8.5 0.70	34 1.48	2.0 0.05	0	76 1.25		48 1.35			0.28			46	85	23	30	USGS
7/15 1530		80	6.9	85	265	7.7			24 1.04		0	77 1.26		30 0.85			0.12			41	74	11	40	USGS
8/20 1505		79	7.9	96	502	7.5			59 2.57		0	97 1.59		88 2.48			0.29			55	105	25	20	USGS
9/11 1705		77	7.3	87	483	7.5	19 0.95	12 0.97	56 2.44	3.2 0.08	0	95 1.56	26 0.54	82 2.31	0.8 0.01	0.50 0.03	0.29	1.9	PO <sub>4</sub> 0.15 P <sub>2</sub> 0.04 Al 0.11	55	96	18	22	USGS
10/23 1205		61	8.3	83	692	7.5			79 3.44		0	152 2.49		108 3.05			0.83			53	150	25	10	USGS
11/26 1015		55	9.5	89	1180	8.3			127 5.52		0	203 4.97		158 4.46			2.2			45	331	83	5	USGS
12/12 1250		53	9.7	89	1170	8.1			139 6.05		4 0.13	308 5.05		152 4.29			2.5			50	298	39	7	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent acid-soluble in ppm	Hardness as CaCO <sub>3</sub> Total N.C. ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
			ppm	% Sat		Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Barium (Ba)	Silica (SiO <sub>2</sub> )				
1957																					
1/15 1315	Tidal Area	50	9.3	82	723	7.1	42 2.10	16 1.32	74 3.22	0	107 1.75		116 3.27				0.30		30		USGS
2/14 1315		56	9.5	90	833	7.3	42 2.10	21 1.70	96 4.18	0	126 2.07		140 3.95				0.32		20		USGS
3/12 1330		59	8.7	86	718	7.5	39 1.95	16 1.33	79 3.44	0	116 1.90		119 3.36				0.29		17		USGS
4/16 1350		63	7.5	78	449	7.3	26 1.30	13 1.10	40 1.74	0	79 1.29		64 1.80				0.17		45		USGS
5/8 1235		68	7.0	76	314	7.3	20 1.00	9.4 0.77	26 1.13	0	71 1.16	30 0.62	41 1.16	1.8 0.03	0.2 0.01		22		20		USGS
6/18 1010		75	7.0	82	312	7.3	19 0.95	7.7 0.63	30 1.30	0	68 1.11		44 1.24				0.30		30		USGS
7/16 0945		77	7.3	87	212	7.3		18 0.78		0	67 1.10		22 0.62				0.00		25		USGS
8/20 1415		78	7.4	89	409	7.7		46 2.00		0	81 1.33		74 2.09				0.13		20		USGS
9/11 1620		77	6.7	79	393	7.7	18 0.90	11 0.92	44 1.91	0	84 1.36	26 0.54	62 1.75	1.4 0.02	0.4 0.02		20		9		USGS
10/23 1125		62	7.0	71	539	7.1		57 2.48		0	96 1.57		85 2.40				0.26		16	Median 230	USGS
11/26 1100		53	8.8	80	449	7.3		49 2.13		0	79 1.29		73 2.06				0.13		7	Max. 7,000	USGS
12/12 1200		49	9.0	78	489	7.1		47 2.04		0	102 1.67		79 2.23				0.12		9	Min. 13	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analysis of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*



TABLE B-14

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent solum	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	equivalents					Other constituents				
														Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)				Boron (B)			
1957																							
1/9 0910	65	40	13.3	103	158	7.5	20 1.00	2.2 0.18	7.2 0.34	1.7 0.04	0 0.00	73 1.20											
2/19 1000	250	52	11.4	103	88.6	7.3	11 0.55	1.1 0.09	5.1 0.22	1.4 0.04	0 0.00	43 0.70											
3/19 1500	290	54	10.9	102	90.2	7.7	12 0.60	1.0 0.08	4.4 0.19	1.0 0.03	0 0.00	44 0.72											
4/9 0945	511	51	10.5	94	59.1	7.3	7.6 0.36	1.2 0.10	2.2 0.13	0.8 0.02	0 0.00	31 0.51											
5/14 0810	700	52	10.9	99	49.9	7.3	6.8 0.34	0.2 0.02	3.5 0.15	1.0 0.03	0 0.00	25 0.41											
6/11 0920	1450	56	10.6	101	34.5	7.1	4.8 0.24	0.1 0.01	1.8 0.08	0.7 0.02	0 0.00	18 0.30											
7/9 0925	335	70	8.8	98	57.4	7.5			2.2 0.13		0 0.00	29 0.48											
8/6 0815	74	64	8.8	92	97.7	7.7			5.2 0.23		0 0.00	49 0.80											
9/25 0930	41	67	9.2	99	137	7.9	18 0.90	1.1 0.09	7.4 0.32	2.4 0.06	0 0.00	66 1.08											
10/15 1200	82	67	9.8	105	130	7.9			5.6 0.24		0 0.00	67 1.10											
11/20 0925	133	51	10.9	98	106	7.5			5.8 0.25		0 0.00	56 0.92											
12/17 1150	920	49	11.2	98	64.8	7.3			3.8 0.17		0 0.00	28 0.46											

Determined by addition of analyzed constituents.

**Gravimetric determination.**

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of

Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

Field of except when noted with \*

Field pH except when noted with a



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhm/cm at 25°C)	pH	Mineral constituents in parts per million										Total Dis- solved solids in ppm b	Per- cent sod- ium	Hardness as CaCO <sub>3</sub>		Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by e
			ppm	% Sat			equivalents per million																
							Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlor- ide (Cl)	Ni- trate (NO <sub>3</sub> )	Fluor- ide (F)			Boron (B)	Silico (SiO <sub>2</sub> )			
1957							KERN RIVER BELOW ISABELLA DAM (STA. 36a)																
1/17 1430	3	46	9.8	82	150	7.4	16 0.80	1.7 0.14	12 0.52	0 0.00	80 1.31	5.0 0.14				0.00			47	0	0.8	USGS	
2/16 1230	3	52	10.8	98	165	7.4	16 0.80	3.6 0.30	14 0.61	0 0.00	84 1.38	5.5 0.16				0.14			55	0	1	USGS	
3/17 1430		57	10.1	97	170	7.7	18 0.90	1.9 0.16	14 0.61	0 0.00	83 1.36	5.5 0.16				0.12			53	0	3	USGS	
4/11 1530	650	56	10.0	95	170	7.6	16 0.80	3.2 0.26	16 0.70	0 0.00	86 1.41	6.0 0.17				0.20			53	0	1	USGS	
5/13 1030	115	59	9.0	88	159	7.7	17 0.85	1.1 0.09	14 0.61	0 0.00	80 1.31	5.5 0.16	0.0 0.00	0.2 0.02	Al 0.03 Cu 0.02 PO <sub>4</sub> 0.10 Fe 0.01 Pb 0.01 Zn 0.02 a	0.12	2.0	47	0	1	USGS		
6/19 0930	1160	63	9.7	100	92.8	7.3	9.5 0.47	0.7 0.06	8.7 0.38	0 0.00	43 0.70	2.0 0.06				0.04			27	0	1	USGS	
7/16 0950	1007	57	8.1	78	88.2	7.1		7.8 0.34		0 0.00	41 0.67	3.6 0.10				0.06			33	0	1	USGS	
8/15 1100	40	69	7.0	77	94.7	7.2		8.1 0.35		0 0.00	46 0.75	3.6 0.10				0.04			31	0	2	USGS	
9/16 1000	7	69	7.8	86	119	7.2	12 0.60	1.6 0.13	10 0.44	0 0.00	57 0.93	4.1 0.12	2.6 0.04	0.2 0.01	Fe 0.03 Al 0.02 PO <sub>4</sub> 0.30 a	0.03	15	36	0	2	USGS		
10/16 1310	6	65	10.5	110	144	7.4		12 0.52		0 0.00	70 1.15	5.5 0.16				0.12			42	0	0.8	USGS	
11/19 1130	200	53	9.2	84	153	7.4		13 0.57		0 0.00	73 1.20	6.0 0.17				0.13			51	0	0.6	USGS	
12/16 1200	100	47	10.5	89	160	7.8		14 0.61		0 0.00	75 1.23	7.5 0.21				0.04			47	0	1	USGS	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-14

ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance at 25°C	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by
						equivalents per million												Total	N.C.			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							
1957						KERN RIVER	NEAR KERNVILLE (STA. 36b)															
1/17 1530	213 38		11.4 85	154	7.4	15 0.75	1.8 0.15	14 0.61	1.5 0.04	0 0.00	76 1.25											
2/16 1145	395 47		11.9 101	135	7.6	13 0.65	2.1 0.17	13 0.57	1.4 0.04	0 0.00	66 1.08											
3/17 1100	365 43		10.7 86	128	7.5	12 0.60	1.7 0.14	15 0.65	1.4 0.04	0 0.00	61 1.00											
4/11 1500	555 54		9.7 90	101	7.6	8.8 0.44	2.2 0.18	8.9 0.39	1.1 0.03	0 0.00	46 0.75											
5/13 0930	794 52		9.5 86	85.0	7.6	8.8 0.44	0.5 0.04	7.0 0.30	0.2 0.02	0 0.00	38 0.62	4.2 0.09										
6/19 0900	1882 60		10.0 100	41.3 6.7	6.7	4.5 0.22	0.1 0.01	3.4 0.15	0.5 0.01	0 0.00	19 0.31											
7/16 0900	560 68		8.7 95	68.2 7.3			6.5 0.28			0 0.00	30 0.49											
8/15 1030	200 68		8.2 89	116	7.4		12 0.52			0 0.00	51 0.84											
9/16 0845	158 61		8.4 85	141	7.6	12 0.60	1.5 0.12	15 0.65	1.9 0.05	0 0.00	60 0.98	9.6 0.20										
10/16 1115	195		9.5	146	7.5			14 0.61		0 0.00	66 1.08											
11/19 1100	220 43		10.7 86	154	7.4			15 0.65		0 0.00	68 1.11											
12/16 0955	378 42		11.4 90	146	7.8			14 0.61		0 0.00	72 1.18											

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBOPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.

TABLE B-11:  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH ±	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- ity in ppm	Caliform d (MPN/ml)	Analyzed by a
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)	Baran (B) (SiO <sub>2</sub> )	Other constituents				
1957										KINGS RIVER	BELOW	NORTH FORK (STA. 330)									
1/17 1210	357	40	13.4	103	61.2	7.0	0.7 0.34	3.7 0.16	0.9 0.02	0 0.00	0.27 0.44		2.5 0.07			0.01		28	20	0 1	USGS
2/12 1500	1034	52	11.8	106	44.1	6.9	0.9 0.24	2.2 0.10	0.9 0.02	0 0.00	0.22 0.36		0.5 0.01			0.00		23	16	0 0.8	USGS
3/11 1200	1076	53	10.7	98	47.6	7.1	0.0 0.28	4.3 0.19	0.8 0.02	0 0.00	0.19 0.31		2.0 0.06			0.07		39	14	0 2	USGS
4/19 1400	1710	44	10.9	89	30.3	7.0	0.2 0.16	2.0 0.09	0.5 0.01	0 0.00	0.15 0.25		0.5 0.01			0.00		32	9	0 3	USGS
5/16 1200	3130	52	9.1	82	25.6	6.6	0.1 0.14	1.6 0.07	0.4 0.01	0 0.00	0.12 0.20	0.0 0.00	0.3 0.01	0.2 0.00	0.3 0.02	0.00	Al 0.08 Cr <sup>6+</sup> 0.01 PO <sub>4</sub> 0.00 Fe 0.01 Zn 0.05 a	20	7	0 3	USGS
6/14 1100	7310	59	9.4	92	17.6	6.6	0.9 0.12	1.8 0.08	0.6 0.02	0 0.00	0.7 0.11		0.0 0.00			0.00		28	10	4 4	USGS
7/12 1200	1770	68	7.1	77	26.7	6.7		1.9 0.08		0 0.00	0.10 0.16		1.8 0.05			0.01		30	10	2 1	USGS
8/6 1420	4585	60	9.7	97	23.6	7.2		1.5 0.07		0 0.00	0.12 0.20		0.8 0.02			0.00		30	8	0 2	USGS
9/13 1200	220	74	8.0	93	62.7	7.5	0.6 0.35	3.8 0.17	1.5 0.04	0 0.00	0.26 0.43	2.9 0.06	3.6 0.10	2.1 0.03	0.0 0.00	0.01	PO <sub>4</sub> 0.05 Al 0.03	44	20	0 2	USGS
10/8 1400	180		8.9		68.0	7.2		3.8 0.17		0 0.00	0.28 0.46		3.8 0.11			0.00		25	25	2 0.1	USGS
11/13 1400	383	58	10.4	101	55.4	7.0		3.9 0.17		0 0.00	0.24 0.39		2.2 0.06			0.02		25	25	5 0.9	USGS
12/9 1100	307	42	10.5	83	59.0	7.3		4.0 0.17		0 0.00	0.25 0.41		3.4 0.10			0.00		31	18	0 0.4	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with a.



TABLE B-14

ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent solid in ppm	Hardness as CaCO <sub>3</sub> Total in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept of Water & Power (LADWP), City of Los Angeles Dept of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or State Department of Water Resources (OWR), as indicated

f Field pH except when noted with \*

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro mhos at 25°C)	pH*	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO3 Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO3)	Bicarbonate (HCO3)	Sulfate (SO4)	Chloride (Cl)	Nitrate (NO3)	Fluoride (F)							Barium (Ba)	Silica (SiO2)	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.



TABLE B-14  
 ANALYSES OF SURFACE WATER  
 CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sulfate in ppm	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by #	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957	Tidal Area									LINDSEY SLOUGH NEAR RIO VISTA (STA. 110)														
1/16 1330		48	11.2	96	209	7.5	15 0.75	8.4 0.69	15 0.65	1.6 0.04	0 0.00	102 1.67		9.0 0.25			0.13		31	72	0	55	USGS	
2/15 1020		49	11.4	99	206	7.3	15 0.75	9.4 0.77	14 0.61	1.4 0.04	0 0.00	94 1.54	15 0.31	11 0.31	1.1 0.02	0.2 0.01		21	Fe 0.17	76	0	40	USGS	
3/22 1020		53	10.5	96	253	7.7	15 0.75	12 0.97	20 0.87	1.8 0.05	0 0.00	100 1.64		16 0.45			0.18		33	86	4	84	USGS	
4/17 0915		60	8.4	84	172	7.3	13 0.65	7.9 0.65	11 0.48	1.2 0.03	0 0.00	78 1.28		7.5 0.21			0.04		27	65	1	25	USGS	
5/9 0945		64	8.6	90	183	7.5	14 0.70	7.3 0.60	17 0.74	1.2 0.03	0 0.00	80 1.31	19 0.40	10 0.28	0.6 0.01	0.1 0.01		0.36	Al 0.17 Cu 0.08 PO <sub>4</sub> 0.20 Fe 0.12 Zn 0.01	65	0	7	USGS	
6/14 1010		68	8.5	93	196	7.7	13 0.65	7.9 0.65	14 0.61	1.6 0.04	0 0.00	84 1.38		10 0.28			0.17		31	65	0	65	USGS	
7/15 1150		80	8.1	100	191	7.9			14 0.61		0 0.00	85 1.39		9.1 0.26			0.00		31	68	0	150	USGS	
8/21 1140		72	7.8	89	198	7.7			15 0.65		0 0.00	90 1.48		11 0.31			0.08		32	70	0	30	USGS	
9/12 1450		72	7.7	87	217	7.7	12 0.60	9.7 0.80	19 0.83	2.0 0.05	0 0.00	94 1.54	15 0.31	12 0.34	0.6 0.01	0.3 0.02		0.15	PO <sub>4</sub> 0.25 Fe 0.19 Al 0.16	70	0	31	USGS	
10/24 1135	64	8.5	89	217	7.5			17 0.74		0 0.00	92 1.51		13 0.37			0.17		34	73	0	10	USGS		
11/25 1245	53	9.8	90	165	7.5			10 0.44		0 0.00	78 1.28		8.0 0.23			0.06		27	60	0	40	USGS		
12/13 1110	47	10.3	87	168	7.3			11 0.48		0 0.00	86 1.41		8.5 0.24			0.01		28	62	0	30	USGS		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{\text{ppm}}{1000}$  except as shown.  
 b Determined by addition of analyzed constituents.  
 c Gravimetric determination.  
 d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.  
 e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.  
 f Field pH except when noted with \*

TABLE B-14

ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in ports per million											Total Dissolved solids in ppm <sup>b</sup>	Percent sodium	Hardness as CaCO <sub>3</sub> Total in ppm	Turbidity in ppm	Coliform <sup>d</sup> MPN/ml	Analyzed by <sup>e</sup>		
			ppm	% Sat		equivalents																		
						Calcium (Ca)	Magnesium sum (Mg)	Sodium (Na)	Potassium sum (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)							Silica (SiO <sub>2</sub> )	Other constituents
1957						LITTLE POTATO SLOUGH AT TERMINOUS (STA. 99)																		
1/11/930	Tidal Area	44	10.9	89	234	7.1	8.4	17	1.3	0	62	11	32	6.5	0.2	0.12	16	Fe 0.03	140	33	75	24	15	USGS
2/13/1330		48	10.7	92	282	7.1	11	20	1.4	0	74	13	42	2.3	0.2	0.02	20	Fe 0.00	166	31	94	33	24	USGS
3/11/1345		54	9.8	91	196	7.1	8.0	12	1.3	0	53	9.6	26	2.9	0.3	0.00	18	Fe 0.14	118	27	68	25	20	USGS
4/15/1420		61	8.7	87	131	7.3	3.9	7.2	1.1	0	51		11			0.00				25	46	4	10	USGS
5/7/1250		66	8.1	86	164	7.3	5.6	10	1.2	0	58	5.8	18	0.7	0.1	0.00	18	Fe 0.02 Al 0.06 Pb 0.15 Cu 0.01 Zn 0.04	101	28	56	8	10	USGS
6/17/1220		66	8.5	90	99	7.1	3.4	6.2	0.9	0	34		11			0.08				28	33	5	10	USGS
7/16/1500		77	7.8	93	256	7.5		19		0	83		32			0.00				34	82	14	20	USGS
8/19/1420		74	8.3	96	230	7.3		18		0	93		22			0.08				34	75	0	15	USGS
9/10/1405		72	7.4	84	215	7.5	8.0	16	2.0	0	83	8.6	20	1.6	0.0	0.02	19	Cu 0.01 Pb 0.20 Fe 0.01 Al 0.02	130	33	68	0	20	USGS
10/22/1350		63	8.0	83	201	7.3		12		0	72		22			0.02				26	74	15	20	Median 230 USGS
11/27/0815		53	9.3	85	182	7.1		12		0	50		27			0.00				31	57	16	20	Max. 7,000 USGS
12/11/1520		48	9.6	83	230	7.1		15		0	62		28			0.00				29	80	29	5	Min. 0.23 USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{90}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in of	Dissolved oxygen	Specific conductance (microhmals at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent sediment	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by a
						Calcium (Ca)	Magne- sum (Mg)	Sodium (Na)	Potas- sum (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- tro- (NO <sub>3</sub> )	Fluo- ride (F)	Silica (SiO <sub>2</sub> )	Other constituents				
1957																					
Jan.			Snowbound																		
Feb.			Snowbound																		
Mar.			Snowbound																		
4/8 1400	1740	50	11.2 99	95.5	7.5	11 0.55	3.2 0.26	4.2 0.18	1.0 0.03	0	58 0.95		1.2 0.03			0.00		18	41 0	1	USGS
5/15 1440	1740	52	10.4 94	88.5	7.5	10 0.50	2.2 0.18	4.1 0.18	0.8 0.02	0	49 0.80	2.5 0.05	0.8 0.02	0.2 0.00	0.0 0.00		Fe 0.01 Al 0.11 Zn 0.01 PO <sub>4</sub> 0.05 a	71 20	34 0	2	USGS
6/18 1415	1430	56	10.4 99	150	7.4	13 0.65	5.1 0.42	9.2 0.43	2.0 0.05	0	86 1.41		3.0 0.08			0.02		28	54 0	1	USGS
7/16 1230	1140	54	10.0 93	97.7	7.5		5.1 0.22			0	53 0.87		1.5 0.04			0.10		20	43 0	2	USGS
8/13 1315	1050	60	10.7 107	101	7.6		6.0 0.26			0	57 0.93		2.3 0.06			0.00		24	41 0	1	USGS
9/11 1430	1010	60	10.2 102	100	8.1	8.8 0.44	3.6 0.30	5.7 0.25	1.8 0.05	0	58 0.95	0.0 0.00	1.6 0.05	0.2 0.00	0.0 0.00		PO <sub>4</sub> 0.10 Al 0.04 a	92 24	37 0	8	USGS
10/8 1520	1100	52	12.8 116	100	7.5		4.6 0.20			0	59 0.97		3.2 0.09			0.06		21	38 0	9	USGS
Nov.			No report																	Median 1.36	
Dec.			Snowbound																	Max. 130	
																				Min. 0.06	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with a

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent acid-soluble in ppm	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a
			ppm	% Sat			equivalents per million																
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )			
1957										MERCED RIVER	BELOW EXCHEQUER DAM (STA. 324)												
1/9 1645	38	50	11.5	101	68.7	7.2	8.4 0.42	1.6 0.13	2.4 0.10	0.8 0.02	0 0.00	33 0.54		2.0 0.06			0.00						
2/20 1205	37	49	11.7	102	76.3	7.1	9.2 0.46	1.8 0.15	3.1 0.13	1.1 0.03	0 0.00	36 0.59		2.5 0.07			0.00						
3/21 0750	766	48	9.9	85	70.0	8.1	8.6 0.43	2.2 0.19	2.2 0.10	0.8 0.02	0 0.00	34 0.56		2.5 0.07			0.05						
4/10 1615	1780	52	9.5	86	66.3	7.1	8.4 0.42	1.7 0.14	2.3 0.10	0.8 0.02	0 0.00	31 0.51		1.5 0.04			0.06						
5/15 1510	1620	54	10.1	94	47.5	6.9	6.2 0.31	0.4 0.03	2.1 0.09	0.6 0.02	0 0.00	22 0.36	1.5 0.03	1.9 0.05	0.3 0.00	0.2 0.01	0.03	9.0	Al 0.05 Cu 0.01 PO <sub>4</sub> 0.00 Fe 0.02 Zn 0.04	0 1			
6/12 1015	2630	61	9.7	98	41.3	7.1	5.5 0.27	0.2 0.02	1.8 0.08	0.4 0.01	0 0.00	19 0.31		0.0 0.00			0.00			0 2			
7/10 1520	1900	58	9.7	94	29.1	6.9		1.4 0.06			0 0.00	12 0.20		0.8 0.02			0.01			1			
8/7 1510	1700	60	8.3	83	24.3	6.7		1.5 0.07			0 0.00	13 0.21		0.7 0.02			0.00			2			
9/26 1030	1230	74	6.9	80	52.2	6.9	5.4 0.27	1.1 0.09	2.2 0.10	1.0 0.03	0 0.00	28 0.46	0.0 0.00	0.2 0.01	0.2 0.00	0.2 0.01	0.00	7.4	PO <sub>4</sub> 0.00 Cu 0.01 Fe 0.10	2			
10/17 0905	42	68	7.1	78	100	7.1		2.5 0.11			0 0.00	56 0.92		2.2 0.06			0.05			8	Median 6.2		
11/21 1155	37	56	9.9	94	115	7.3		3.6 0.16			0 0.00	57 0.93		3.8 0.11			0.00			7	Max. 620		
12/18 1240	38	53	10.3	94	119	7.1		4.4 0.19			0 0.00	56 0.92		5.8 0.16			0.00			35	Min. 0.06		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-14

ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent total in ppm	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by #				
			ppm	% Sat			equivalents per million																				
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents			
1957							MERCED RIVER NEAR STEVINSON (STA. 32)																				
1/9 1435	156	52	11.3	102	288	7.5	20 1.00	7.3 0.60	29 1.26	2.2 0.06	0 0.00	132 2.16		19 0.54				0.00					43	80	0 2		USGS
2/20 1005	155	60	9.7	97	276	7.5	19 0.95	7.2 0.59	28 1.22	2.2 0.06	0 0.00	124 2.03		18 0.51				0.00					43	77	0 2		USGS
3/20 1515	670	58	10.5	102	104	7.4	10 0.50	3.2 0.32	5.7 0.25	1.1 0.03	0 0.00	53 0.87		3.8 0.11				0.12					23	41	0 6		USGS
4/10 1425	233	66	9.2	98	180	7.5	14 0.70	4.9 0.40	16 0.70	1.6 0.04	0 0.00	82 1.34		10 0.28				0.05					38	55	0 3		USGS
5/15 1245	266	68	8.9	97	169	7.5	15 0.75	2.8 0.23	15 0.65	1.8 0.05	0 0.00	79 1.29	4.8 0.10	8.5 0.24	1.2 0.03	0.2 0.01		0.01	49	Al 0.08 PO <sub>4</sub> 0.15 Fe 0.04 Zn 0.03	138	39	49	0 5		USGS	
6/10 1045	2530	64	8.2	86	514	7.1	6.0 0.30	0.5 0.04	2.4 0.10	0.5 0.01	0 0.00	24 0.39		0.1 0.00				0.00				22	17	0 10		USGS	
7/10 1230	162	78	10.6	128	244	8.1			28 1.22		0 0.00	102 1.67		22 0.62				0.00				49	64	0 3		USGS	
8/7 1320	133	76	8.4	99	257	7.5			29 1.26		0 0.00	106 1.74		21 0.59				0.00				49	66	0 3		USGS	
9/26 0830	230	68	7.9	86	224	7.5	16 0.80	5.2 0.43	21 0.91	2.2 0.06	0 0.00	99 1.62	9.6 0.20	14 0.39	2.0 0.03	0.0 0.00		0.01	20	PO <sub>4</sub> 0.20 Fe 0.01 Zn 0.01 Al 0.06	149	41	62	0 5		USGS	
10/14 1150	285	67	8.9	96	193	7.5			18 0.78		0 0.00	92 1.51		12 0.34				0.24				40	57	0 7		Median 62 USGS	
11/21 0930	142	56	9.5	90	304	7.7			32 1.39		0 0.00	138 2.26		21 0.59				0.02				44	89	0 1		Max. 7,000 USGS	
12/16 1110	149	55	9.5	89	280	7.3			28 1.22		0 0.00	124 2.03		18 0.51				0.00				44	76	0 5		Min. 2.3 USGS	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a	
			ppm	% Sat			equivalents per million																	
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957							MILL CREEK NEAR LOS MOLINOS (STA. 88)																	
1/11 1120	93	37	13.5	100	198	7.3	13 0.65	5.2 0.43	14 0.61	1.0 0.03	0	68 1.11	20 0.56				0.56			35	54	0	0.6	USGS
2/14 1030	155	51	11.6	104	201	7.7	13 0.65	5.7 0.47	18 0.78	2.4 0.06	0	63 1.03	20 0.56				0.54			40	56	4	1	USGS
3/13 1150	539	47	12.2	104	100	7.3	8.0 0.40	3.0 0.25	7.2 0.31	1.3 0.03	0	42 0.69	7.2 0.20				0.15			31	32	0	1	USGS
4/9 1210	164	57	10.4	100	134	7.5	9.6 0.48	3.6 0.30	10 0.44	1.7 0.04	0	48 0.79	9.5 0.27				0.41			35	39	0	2	USGS
5/7 1430	257	59	9.7	96	117	7.3	8.7 0.43	2.9 0.24	8.7 0.38	1.6 0.04	0	38 0.62	8.2 0.23				0.28	Al 0.09 Zn 0.05 PO <sub>4</sub> 0.10 a Fe 0.05 As 0.01	92	35	34	3	1	USGS
6/11 1410	214	68	9.3	102	113	7.5	9.2 0.46	2.4 0.20	7.7 0.33	1.6 0.04	0	34 0.56	6.5 0.18				0.29			32	33	5	4.6	USGS
7/9 1040	20	73	9.2	105	154	7.9			11 0.48		0	49 0.80	20 0.56				0.41			31	54	14	1	USGS
8/13 1455	2.7	82	10.9	137	212	8.2			15 0.65		0	80 1.31	15 0.42				0.42			27	88	22	0.8	USGS
9/17 1225	3.7	72	9.7	110	213	7.7	15 0.75	6.8 0.56	16 0.70	3.2 0.08	0	76 1.25	13 0.27				0.48	PO <sub>4</sub> 0.10 As 0.02	149	33	65	3	1	USGS
10/23 1435	122	56	10.1	96	187	7.5			15 0.65		0	62 1.02	14 0.39				0.39			35	60	9	4	USGS
11/13 1125	125	53	10.7	98	203	7.5			17 0.74		0	56 0.92	22 0.62				0.50			40	56	10	0.4	USGS
12/19 1015	551	46	11.5	96	113	7.3			8.0 0.35		0	49 0.70	8.5 0.24				0.22			27	48	8	1	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{90}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-11

ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )			
1957	Not Available					MORELONE RIVER BELOW CUSIMNES RIVER (Sta. 23b)																
2-27 1330		55		113				<u>0.3</u>											100	1.2	USBR	
5-1 1435		65		77				<u>3.2</u>											58	18	USBR	
5-27 1315		70		71				<u>3.5</u>											48	21	USBR	
6-27 1035		71		52				<u>2.5</u>											48	21	USBR	
7-30 1430		74		72				<u>3.9</u>											76	24	USBR	
8-27 1100		70		55				<u>3.4</u>											68	27	USBR	
10-1 1305		70		53				<u>4.4</u>											40	36	USBR	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBDPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> Total N.C. ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>
			ppm	% Sat			equivalents per million															
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)						
1957	Not Rated																					
2-27 1205		54			129			0.6										84	2.0		USBR	
5-1 1130		63			140			6.2										112	19		USBR	
5-27 1215		70			109			9.4										88	37		USBR	
6-27 1005		74			162			10										136	27		USBR	
7-30 1500		70			199			16										152	35		USBR	
8-26 1530		70			199			14										148	31		USBR	
10-1 1335		70			204			10										120	21		USBR	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14

ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhm/cm at 25°C)	pH <sup>f</sup>	Mineral constituents in parts per million										Total Dissolved solids in ppm <sup>b</sup>	Per cent total in ppm	Hardness as CaCO <sub>3</sub> ppm		Turbidity in ppm	Coliform <sup>d</sup> MPN/ml	Analyzed by <sup>e</sup>	
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957																								
1/14 1000	698	47	12.3	105	39.0	6.9	3.8 0.19	0.7 0.06	2.0 0.09	0.6 0.02	0 0.00	16 0.26		1.3 0.04			0.00			25	12	0	0.6	USGS
2/13 1005	144	46	12.1	101	45.1	6.9	4.4 0.22	1.1 0.09	2.2 0.10	0.7 0.02	0 0.00	17 0.28		1.5 0.04			0.04			23	16	2	0.8	USGS
3/11 1035	716	48	12.5	107	43.0	6.9	4.2 0.20	1.8 0.15	2.1 0.09	0.6 0.02	0 0.00	16 0.26		2.5 0.07			0.15			20	18	5	2	USGS
4/15 1105	694	51	11.3	101	43.2	7.1	4.8 0.24	1.0 0.08	2.3 0.10	0.8 0.02	0 0.00	22 0.36		1.4 0.04			0.00			23	16	0	4	USGS
5/7 0900	688	50	11.0	97	46	6.9	5.5 0.27	0.6 0.05	2.1 0.09	0.7 0.02	0 0.00	21 0.34	1.9 0.04	2.0 0.06	0.0 0.00	0.0 0.00	0.02 11	PO <sub>4</sub> 0.00 Fe 0.05 Al 0.07 Zn 0.09 <sup>a</sup>	34	21	16	0	8	USGS
6/17 0935	710	57	10.7	102	43.4	6.9	4.8 0.24	1.0 0.08	2.1 0.09	0.5 0.01	0 0.00	20 0.33		0.5 0.01			0.00			21	16	0	3	USGS
7/17 0950	699	59	10.2	100	33.5	7.0			2.0 0.09		0 0.00	16 0.26		1.0 0.03			0.04			24	14	1	1	USGS
8/19 0945	694	60	9.7	97	32.9	6.8			1.9 0.08		0 0.00	12 0.20		2.0 0.06			0.00			20	16	6	1	USGS
9/13 1120	682	61	9.8	96	33.5	7.0	3.6 0.18	0.2 0.02	2.0 0.09	1.0 0.03	0 0.00	14 0.23	1.9 0.04	2.6 0.07	0.2 0.00	0.0 0.00	0.00 13	PO <sub>4</sub> 0.00 <sup>a</sup> Fe 0.05 Al 0.04 Zn 0.05 Cu 0.01	32	28	10	0	0.7	USGS
10/22 1050	677	59	9.9	98	34.7	6.9			1.8 0.08		0 0.00	19 0.31		0.8 0.02			0.05			24	13	0	0.6	USGS
11/27 1330	677	56	10.4	99	35.5	7.0			2.2 0.10		0 0.00	16 0.26		2.0 0.06			0.00			27	13	0	1	USGS
12/11 1045	672	52	11.0	100	35.6	6.9			2.5 0.11		0 0.11	16 0.26		3.0 0.08			0.10			28	14	11	1	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with °



TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent solid - lum	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by	
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957	Mean Daily																							
1/11 0840	305	44	12.4	101	39.4	6.9	4.0 0.20	2.1 0.17	2.0 0.09	0.7 0.04	0 0.00	20 0.33		1.2 0.03			0.00		18	2	1	USGS		
2/21 1545	109	55	10.9	102	57.1	6.9	5.4 0.27	1.5 0.12	3.1 0.13	0.8 0.02	0 0.00	23 0.33		2.2 0.06			0.02		20	1	1	USGS		
3/15 1350	764	55	11.8	111	42.4	7.3	2.8 0.14	2.9 0.24	2.1 0.09	0.8 0.02	0 0.00	18 0.30		1.6 0.05			0.02		19	4	9	USGS		
4/12 0940	388	55	9.9	93	44.3	7.1	5.2 0.26	0.7 0.06	2.3 0.10	0.7 0.02	0 0.00	24 0.39		1.3 0.04			0.00		16	0	6	USGS		
5/17 0930	304	60	9.8	98	48	7.1	5.2 0.26	0.9 0.07	2.6 0.11	0.8 0.02	0 0.00	22 0.35	2.5 0.05	1.4 0.04	0.4 0.01	0.2 0.01	0.00	12	PO <sub>4</sub> 0.00 <sup>a</sup> Fe 0.05 Al 0.14 Cu 0.01 Zn 0.02 <sup>a</sup>	17	0	2	USGS	
6/13 1235	1640	63	9.8	101	43.7	7.1	5.4 0.27	0.0 0.00	2.2 0.10	0.7 0.02	0 0.00	20 0.33		0.5 0.01			0.00		14	0	6	USGS		
7/12 0815	86	71	8.4	95	41.9	7.1			2.4 0.10		0 0.00	18 0.30		1.2 0.03			0.15		20	5	1	USGS		
8/9 0750	91	68	9.3	101	37.8	7.3			2.4 0.10		0 0.00	15 0.25		2.2 0.06			0.06		14	2	1	USGS		
9/27 1220	261	65	9.3	98	44.7	7.1	2.4 0.12	1.5 0.12	2.6 0.11	1.2 0.03	0 0.00	20 0.33	1.0 0.02	1.3 0.04	0 0.00	0 0.00	0.00	10	PO <sub>4</sub> 0.10 Cu 0.01 <sup>a</sup>	12	0	2	USGS	
10/18 0925	314	45	9.1	75	41	6.9			2.4 0.10		0 0.00	21 0.34		1.8 0.05			0.07		16	0	1	USGS		
11/22 1345	445	54	10.4	96	38.8	7.1			2.2 0.10		0 0.00	18 0.30		1.0 0.03			0.00		14	0	5	USGS		
12/11 1555	370	49	11.1	97	38.9	6.9			2.7 0.12		0 0.00	17 0.25		3.5 0.10			0.10		15	1	1	USGS		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.



Field pH except when noted with \*

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (microhmhos of 25°C)	pH	Mineral constituents in ————— equivalents per million										Total dissolved solids in ppm (G)	Percent sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957	Average																				
6/14-23	Mean Daily 1030			49.2	6.9	44.4 0.22	1.7 0.44	2.8 0.12		0 0.00	20 0.33							31	18	2	USGS
6/24-30	100			44.0	6.5	44.4 0.22	0.7 0.05	2.4 0.10		0 0.00	18 0.30							29	14	0	USGS
7/1-10	100			40.7	6.3	44.0 0.20	1.0 0.08	2.6 0.11		0 0.00	16 0.25							32	14	1	USGS
7/11-20	90			38.8	7.0	44.0 0.20	0.7 0.06	2.4 0.10		0 0.00	13 0.30							22	13	0	USGS
7/21-31	100			43.2	6.9	44.2 0.21	0.5 0.04	2.3 0.10		0 0.00	16 0.25							27	12	0	USGS
8/1-15	100			42.8	7.1	44.2 0.21	1.1 0.09	2.4 0.10		0 0.00	20 0.33							43	15	0	USGS
8/16-31	160			43.8	6.9	50 0.25	1.1 0.09	2.4 0.10		0 0.00	24 0.37							46	17	0	USGS
9/1-7	170			40.1	7.0	44.4 0.22	1.5 0.12	2.2 0.10		0 0.00	22 0.35							44	17	0	USGS
9/8	161			56.8	6.9	74.4 0.37	1.3 0.11	2.1 0.09		0 0.00	24 0.39								24	4	USGS
9/9-20	210			39.6	6.5	24.4 0.12	1.9 0.16	2.6 0.11		0 0.00	16 0.25							36	14	1	USGS
9/21-30	290			44.3	7.0	44.0 0.20	1.2 0.10	2.5 0.11		0 0.00	18 0.30							32	15	0	USGS
10/1-10	250			42.0	7.0	44.4 0.22	1.5 0.12	2.2 0.10		0 0.00	18 0.30							30	17	2	USGS
10/11-20	320			41.9	6.8	44.8 0.24	1.5 0.12	2.2 0.10		0 0.00	19 0.31							33	18	2	USGS
10/21-31	360			47.0	6.7	44.4 0.22	0.7 0.06	2.1 0.09		0 0.00	17 0.28							32	14	0	USGS
11/1-10	350			48.4	6.7	44.8 0.24	1.5 0.12	2.1 0.09		0 0.00	16 0.25							41	18	5	USGS
11/11-20	410			38.8	6.8	44.4 0.22	1.0 0.08	1.9 0.08		0 0.00	16 0.25							33	15	2	USGS

Zn 0.05<sup>a</sup>

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.  
b Determined by addition of analyzed constituents  
c Gravimetric determination.  
d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.  
e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept of Water & Power (LADWP), City of Los Angeles Dept of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.  
f Field pH except when noted with \*

TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million											Total Dissolved solids in ppm (c)	Per-cent sodium	Hardness as CaCO <sub>3</sub>		Tur-bidity in ppm	Coliform MPN/ml	Analyzed by
			ppm	%Sat			equivalents per million																	
							Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Corban-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-trate (NO <sub>3</sub> )	Fluo-ride (F)	Boran (B)			Silica (SiO <sub>2</sub> )	Other constituents			
1957	Average																							
	Mean																							
11/21-30	440				46.1	6.7	4.4 0.22	1.2 0.10	2.3 0.10	0 0.00	14 0.23						31	24	16	5	USGS			
12/1-18	420				41.6	6.4	4.3 0.21	1.0 0.08	2.2 0.10	0 0.00	16 0.26						50		14		USGS			
12/19-28	420				47.6	6.4	4.2 0.21	1.0 0.08	2.3 0.10	0 0.00	13 0.21						51		15		USGS			

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm <sup>b</sup>	Per cent solid <sup>c</sup>	Hardness as CaCO <sub>3</sub> Total N.C. ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			ppm	% Sat			equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
1957									OLD RIVER AT CLIFTON COURT FERRY (STA. 104)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



CENTRAL VALLEY REGION

Field pH except when noted with \*



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm <sup>b</sup>	Percent acid-soluble in ppm	Hardness as CaCO <sub>3</sub> Total N/C ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
			ppm	%Sat			equivalents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm <sup>b</sup>	Percent Sulfate in ppm	Hardness as CaCO <sub>3</sub> in ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{ppm}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH, except when noted with \*.

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
			ppm	% Sat		equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH) Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*





TABLE B-14  
ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge Temp in cfs in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per-cent sodium	Hardness as CaCO <sub>3</sub>		Tur-bid-ity in ppm	Coliform MPN/ml	Analyzed by a
		ppm	% Sat			equivalents																
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-t-rite (NO <sub>3</sub> )	Fluo-ride (F)			Boron (B)	Silica (SiO <sub>2</sub> )			
1957																						
Jan.	snowbound																					
Feb.	snowbound																					
Mar.	snowbound																					
4/8 1600	4440	58	9.8	95	143	7.5	12 0.60	6.1 0.50	9.3 0.40	1.9 0.05	0 0.00	84 1.38				0.02		26	55	0	7	USGS
5/15 1010	4440	55	9.9	93	148	7.3	13 0.65	5.4 0.44	9.8 0.43	1.9 0.05	0 0.00	85 1.39	4.4 0.09	2.3 0.06	0.4 0.01	0.1 0.01	0.00 0.00	110	54	0	3	USGS
6/18 1030	2180	66	9.3	99	101	7.5	12 0.60	2.3 0.19	4.8 0.21	1.3 0.03	0 0.00	62 1.02				0.00		20	40	0	2	USGS
7/16 1000	1920	66	9.2	98	155	7.5												34	56	0	0.6	USGS
8/13 1000	3990	70	9.5	106	156	7.6												28	63	0	0.6	USGS
9/11 1200	3930	64	9.7	101	156	8.4	11 0.55	6.4 0.53	11 0.48	2.6 0.07	0 0.00	90 1.48	1.9 0.04	4.8 0.14	0.2 0.00	0.0 0.00	0.07 0.00	119	54	0	2	USGS
10/8 1325	2970	58	11.8	115	161	7.6												31	54	0	0.9	USGS
Nov.	No report																					
Dec.	Snowbound																					

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance in microhm/cm at 25°C	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent sodium in ppm	Hardness as CaCO <sub>3</sub> in ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by				
			ppm	% Sat			equivalents per million																				
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents			
1957										PUTAH CREEK NEAR WINTERS (STA. 8)																	
1/14 1630	38 47	11.2	95		550	8.1	32 1.60	47 3.84	20 0.87	1.5 0.04	0 0.00	320 5.24		17 0.48			0.57					14	272	10	55		USGS
2/18 1515	69 53	12.8	117		331	8.4	17 0.85	29 2.39	11 0.48	1.1 0.03	0 0.00	183 3.00		8.5 0.24			0.26					13	162	12	9		USGS
3/11 1115	42 54	11.2	104		303	8.1	18 0.90	23 1.86	17 0.74	1.4 0.04	0 0.00	151 2.47		10 0.28			0.36					21	138	14	32		USGS
4/15 1355	44 60	12.6	126		229	8.3	14 0.70	17 1.40	7.3 0.32	1.4 0.04	0 0.00	121 1.98		5.5 0.16			0.36					13	105	6	50		USGS
5/10 1400	42 60	10.9	109		222	8.3	14 0.70	16 1.34	7.6 0.33	1.3 0.03	0 0.00	118 1.93	12 0.25	5.8 0.16	1.1 0.02	0.1 0.01	0.16	21	Al 0.11 Zn 0.03 PO <sub>4</sub> 0.15 Fe 0.07		14	102	5	12		USGS	
6/14 1230	47 61	10.8	108		222	8.1	14 0.70	21 1.76	6.5 0.28	1.2 0.03	0 0.00	121 1.98		4.5 0.13			0.00				10	123	24	10		USGS	
7/16 1040	23 65	9.2	97		232	8.3			6.6 0.29		0 0.00	130 2.13		4.8 0.14			0.24				11	113	6	4		USGS	
8/19 1425	12 72	11.6	131		264	8.4			9.2 0.40		0 0.00	149 2.44		7.0 0.20			0.33				13	130	8	2		USGS	
9/10 1430	10 70	11.9	132		261	8.4	16 0.80	19 1.57	8.6 0.37	1.7 0.04	0 0.00	144 2.36	8.6 0.18	3.8 0.11	0.0 0.00	0.3 0.02	0.22	19	PO <sub>4</sub> 0.10 Fe 0.01 Al 0.56		13	118	0	2		USGS	
10/28 1140	49 58	10.2	99		255	7.9			7.2 0.31		0 0.00	151 2.47		3.5 0.10			0.15				11	120	0	5	Median 6.2	USGS	
11/18 1430	16 54	9.7	90		318	7.7			9.2 0.40		2 0.07	178 2.92		7.3 0.21			0.20		Tot. Alk. 182		12	153	4	0.8	Max. 230	USGS	
12/23 1535	54 50	12.1	107		338	8.1			9.9 0.43		0 0.00	199 3.26		8.0 0.23			0.21				11	168	5	1	Min. 0.62	USGS	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with a.

TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total dissolved solids in ppm <sup>b</sup>	Percent total hardness as CaCO <sub>3</sub> in ppm	Hardness as CaCO <sub>3</sub> in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
			ppm	% Sat		Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957																					
1/16 0915	Tidal Area	48	9.2	79	831	53 2.64	24 1.96	76 3.31	2.9 0.07	0	92 1.51		107 3.02				0.40		230 155	15	USGS
2/14 1615		53	9.3	85	801	44 2.20	23 1.90	85 3.70	2.8 0.07	0	114 1.87		120 3.38				0.32		205 112	35	USGS
3/12 1600		57	8.8	84	954	52 2.59	29 2.37	99 4.31	3.2 0.08	0	116 1.90		144 4.06				0.30		248 153	11	USGS
4/16 1610		62	6.8	69	400	24 1.20	12 1.02	35 1.52	2.2 0.06	0	91 1.49		52 1.47				0.17		111 36	20	USGS
5/8 1540		66	6.0	64	260	17 0.85	8.1 0.67	24 1.04	1.7 0.04	0	74 1.21	27 0.56	30 0.85	1.0 0.02	0.1 0.01		0.08 18	Fe 0.13 Al 0.14 PO <sub>4</sub> 0.20 Zn 0.01	76 15	10	USGS
6/18 1240		75	5.8	68	328	20 1.00	8.5 0.70	31 1.35	2.5 0.06	0	80 1.31		44 1.24				0.19		84 19	20	USGS
7/15 1345		80	7.1	87	212			18 0.78		0	72 1.18		21 0.59				0.00		64 5	35	USGS
8/21 0830		74	6.8	79	457			55 2.39		0	83 1.36		84 2.37				0.11		93 25	20	USGS
9/12 0920		72	7.3	83	404	16 0.80	11 0.92	46 2.00	3.0 0.08	0	85 1.39	22 0.46	66 1.86	0.5 0.01	0.3 0.02		0.12 20	PO <sub>4</sub> 0.15 Fe 0.03 Al 0.09	86 16	16	USGS
10/23 1420		61	7.5	75	375			39 1.70		0	102 1.67		52 1.47				0.08		95 11	10	USGS
11/25 1550		55	9.0	84	566			60 2.61		0	107 1.75		90 2.54				0.22		129 41	8	USGS
12/12 1420		47	9.2	78	552			58 2.52		0	98 1.61		88 2.48				0.24		124 44	5	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{90}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBDPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.



TABLE B-11

ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (microhmohms at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent total solidium	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
						equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fide (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
1957	AVERAGE MEAN DAILY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively

e Mineral analyses made by USGS, Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*



TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (microhm-cm at 25°C)	pH*	Mineral constituents in parts per million												Total Dissolved solids in ppm	Per cent suspended	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>a</sup>
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )			Other constituents				
1957	AVERAGE MEAN DAILY																							
4/20-30	8360			131	7.0	12 0.60	3.6 0.30	7.2 0.32	1.4 0.04	0 0.00	65 1.07	6.7 0.14	2.6 0.07	0.3 0.00	0.2 0.01	0.00	26	Fe 0.09;Cu 0.02 Zn 0.13	25	115	0	USGS		
5/1-17	9830			132	7.3	11 0.55	4.5 0.37	7.4 0.32	1.8 0.05	0 0.00	67 1.10	3.3 0.07	2.4 0.07	0.3 0.00	0.2 0.01	0.00	26	Fe 0.08;Cu 0.02 Zn 0.09	25	116	0	USGS		
5/18-19	29,900			106	7.1	9.6 0.48	4.0 0.33	6.1 0.27		0 0.00	56 0.92							Cu 0.01;Zn 0.06	80 <sup>b</sup>	111	0	USGS		
5/20-21	28,850			111	7.1	10 0.50	3.2 0.32	5.2 0.26		0 0.00	60 0.98							Cu 0.01;Zn 0.04	78 <sup>b</sup>	111	0	USGS		
5/22-31	13,650			118	7.1	11 0.55	4.0 0.33	6.1 0.27	1.1 0.03	0 0.00	62 1.02	4.0 0.08	2.3 0.06	0.3 0.00	0.2 0.01	0.00	25	Fe 0.14;Cu 0.02 Zn 0.08	23	114	0	USGS		
6/1-15	10,000			128	7.0	10 0.50	4.6 0.38	7.2 0.31	1.8 0.05	0 0.00	64 1.05	3.8 0.08	4.0 0.11	0.8 0.01	0.0 0.00	0.00	25	Fe 0.04;Cu 0.02 Zn 0.09	25	114	0	USGS		
6/16-30	8860			118	7.1	11 0.55	4.5 0.37	7.2 0.31	1.8 0.05	0 0.00	66 1.11	3.8 0.08	3.2 0.09	0.8 0.01	0.0 0.00	0.00	26	Fe 0.02;Cu 0.03 Zn 0.09	24	116	0	USGS		
7/1-10	9500			123	6.9	12 0.60	3.4 0.28	6.2 0.30	1.8 0.05	0 0.00	64 1.05	3.8 0.08	3.5 0.10	0.7 0.01	0.0 0.00	0.00	26	Fe 0.04;Cu 0.03 Zn 0.10	24	114	0	USGS		
7/11-20	9610			120	6.9	10 0.50	4.1 0.34	6.9 0.30	1.8 0.05	0 0.00	64 1.05	3.8 0.08	2.5 0.07	0.7 0.01	0.0 0.00	0.06	25	Fe 0.03;Cu 0.02 Zn 0.08	25	112	0	USGS		
7/21-31	9350			114	6.9	10 0.50	4.6 0.38	6.8 0.30	1.8 0.05	0 0.00	64 1.05	2.9 0.06	3.5 0.10	0.0 0.00	0.0 0.00	0.05	24	Fe 0.02;Cu 0.02 Zn 0.10	24	114	0	USGS		
8/1-15	9110			119	7.5	9.6 0.48	5.4 0.44	6.9 0.30	1.5 0.04	0 0.00	64 1.05	5.8 0.12	3.5 0.10	0.6 0.01	0.0 0.00	0.24	26	Fe 0.00	24	116	0	USGS		
8/16-31	8620			118	7.1	10 0.50	4.4 0.36	6.8 0.30	1.5 0.04	0 0.00	64 1.05	1.2 0.04	3.5 0.10	0.3 0.00	0.0 0.00	0.17	26	Fe 0.00;Cu 0.00 Zn 0.06	25	113	0	USGS		
9/1-9	8210			119	7.4	10 0.50	4.6 0.38	6.7 0.29	1.5 0.04	0 0.00	64 1.05	1.9 0.04	3.5 0.10	0.5 0.01	0.0 0.00	0.46	26	Fe 0.00;Cu 0.00 Zn 0.05	24	114	0	USGS		
9/26-30	9200			122	7.2	10 0.50	6.2 0.52	6.7 0.29	1.6 0.04	0 0.00	59 0.97	1.2 0.25	4.0 0.11	0.0 0.00	0.05 0.01	0.0	26	Fe 0.08;Cu 0.00 Zn 0.11	21	51	0	USGS		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultation (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-111

# ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH <sup>*</sup>	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by		
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)	Silica (SiO <sub>2</sub> )
1957	AVERAGE MEAN DAILY																							
9/10-25	7270				123	6.8	8.8 0.44	6.1 0.50	7.1 0.31	1.7 0.04	0 0.00	68 1.11	4.8 0.10	2.5 0.07	0.1 0.00	0.1 0.01	0.00	25	Fe 0.02; Mn 0.01; Zn 0.11	17	0	103	24	USGS
9/26-30	9200				122	7.2	10 0.50	6.3 0.52	6.7 0.29	1.6 0.04	0 0.00	59 0.97	12 0.25	4.0 0.11	0.5 0.01	0.0 0.00	0.37	26	Fe 0.08; Cu 0.00; Zn 0.11	51	0	91 <sup>b</sup>	21	USGS
10/1-12	9590				123	7.3	11 0.55	4.6 0.38	6.5 0.28	1.4 0.04	0 0.00	62 1.02	5.8 0.12	3.8 0.11	1.1 0.02	0.1 0.01	0.00	24	Fe 0.04; Cu 0.00; Zn 0.14	46	0	97	22	USGS
10/13	21,300				121	7.2	11 0.55	4.3 0.35	5.5 0.24		0 0.00	56 0.92							Zn 0.04	45	0	101		USGS
10/14-31	10,190				127	7.3	11 0.55	5.5 0.45	6.4 0.28	1.3 0.03	0 0.00	64 1.05	8.1 0.17	3.4 0.10	1.1 0.02	0.1 0.01	0.00	24	Fe 0.03; Cu 0.00; Zn 0.14	50	0	97	21	USGS
11/1-10	8790				131	7.4	13 0.65	5.2 0.43	7.1 0.31	1.6 0.04	0 0.00	68 1.11	9.6 0.20	4.0 0.11	0.4 0.01	0.0 0.00	0.05	27	Fe 0.04; Cu 0.02; Zn 0.07	51	0	116	22	USGS
11/11	9090				146	7.1	12 0.60	7.1 0.58	7.2 0.31		0 0.00	68 1.11							Cu 0.03; Zn 0.07	59	3	117		USGS
11/12-14	16,880				121	6.8	12 0.60	4.1 0.34	6.1 0.27	1.5 0.04	0 0.00	50 0.82	11 0.23	4.5 0.13	2.2 0.04		0.01	21	Fe 0.04; Cu 0.03; Zn 0.05	47	6	93	22	USGS
11/15-30	11,730				137	6.8	12 0.60	6.3 0.52	7.1 0.31	1.5 0.04	0 0.00	68 1.11	11 0.23	4.0 0.11	0.4 0.01	0.0 0.00	0.05	28	Fe 0.05; Cu 0.05; Zn 0.05	56	0	106	21	USGS
12/1-15	8700				143	7.6	12 0.60	5.4 0.44	8.1 0.35	1.9 0.05	0 0.00	76 1.25	4.8 0.10	4.0 0.11	0.6 0.01	0.0 0.00	0.02	28	Fe 0.02	52	0	108	24	USGS
12/16-22	16,070				124	7.0	11 0.55	4.4 0.36	6.7 0.29	1.7 0.04	0 0.00	60 0.98	6.7 0.14	3.8 0.11	1.0 0.02	0.0 0.00	0.07	24	Fe 0.04	46	0	95	23	USGS
12/23-31	15,060				135	7.3	11 0.55	5.5 0.45	7.4 0.32	1.7 0.04	0 0.00	70 1.15	5.8 0.12	3.6 0.10	0.8 0.01	0.0 0.00	0.08	27	Fe 0.02	50	0	100	24	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown. \* TDS, ppt.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp. in °F	Dissolved oxygen	Specific conductance (microhmhos at 25°C)	pH*	Mineral constituents in parts per million										Total Dissolved solids in ppm <sub>c</sub>	Per cent solid - sum	Hardness as CaCO <sub>3</sub>		Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by		
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)			Boron (B)	Silico (SiO <sub>2</sub> )				Other constituents	Total ppm
1957	AVERAGE MEAN DAILY					SACRAMENTO RIVER AT WHITE CITY (Sta. 874)																		
1/1-7, 9-13	5705			159	7.0	14 0.70	5.6 0.46	9.7 0.42	2.0 0.05	0 0.00	84 1.38	5.8 0.12	5.0 0.14	1.0 0.02	0.1 0.01	0.20	31	Fe 0.02		120	26	58	0	USGS
1/14	12,600			137	6.7	13 0.65	2.8 0.31	8.2 0.36	1.9 0.05	0 0.00	56 0.92									117	26	48	2	USGS
1/15-22	6990			158	6.9	13 0.65	6.0 0.49	9.1 0.40	1.8 0.05	0 0.00	69 1.13	9.6 0.20	7.0 0.20	1.6 0.03	0.5 0.03	0.16	26	Fe 0.07		122	25	57	0	USGS
1/23, 26-31	5565			174	6.9	14 0.70	7.1 0.58	10 0.44	1.8 0.05	0 0.00	83 1.36	8.6 0.18	7.0 0.20	1.1 0.02	0.3 0.02	0.18	30	Fe 0.04		128	25	64	0	USGS
2/1-10	1686			168	7.3	13 0.65	8.6 0.71	11 0.48	1.7 0.04	0 0.00	89 1.46	7.7 0.16	6.0 0.17	1.2 0.02	0.1 0.01	0.00	31	Fe 0.03		119	26	68	0	USGS
2/11-23	5002			165	7.3	15 0.75	6.7 0.55	10 0.44	1.6 0.04	0 0.00	86 1.41	5.8 0.12	6.0 0.17	1.1 0.02	0.1 0.01	0.11	30	Fe 0.03		116	25	65	0	USGS
2/24-28	39,040			106	7.0	10 0.50	4.9 0.40	5.3 0.23	1.4 0.04	0 0.00	51 0.84	4.8 0.10	6.0 0.17	1.2 0.02	0.1 0.01	0.04	19	Fe 0.26		98	19	45	3	USGS
3/1-7	45,843			127	7.0	11 0.55	3.9 0.32	7.4 0.32	1.4 0.04	0 0.00	64 1.05	2.5 0.05	3.0 0.08	0.5 0.01	0.2 0.01	0.00	29	Fe 0.06 Zn 0.03 <sup>a</sup>		95	26	43	0	USGS
3/8-19	23,200			135	7.0	12 0.60	4.6 0.38	7.4 0.32	1.7 0.04	0 0.00	66 1.08	5.2 0.11	4.0 0.11	0.6 0.01	0.2 0.01	0.00	28	Fe 0.06; Cu 0.01 Zn 0.01 <sup>a</sup>		96	24	49	0	USGS
3/20-31	12,610			161	6.8	13 0.65	5.7 0.47	7.9 0.34	1.9 0.05	0 0.00	75 1.25	5.4 0.11	4.5 0.13	0.5 0.01	0.2 0.01	0.00	25	Fe 0.05; Cu 0.07 Zn 0.01 <sup>a</sup>		103	23	56	0	USGS
4/1-14	6178			162	7.4	14 0.70	6.6 0.54	8.9 0.39	2.0 0.05	0 0.00	82 1.34	9.6 0.20	5.5 0.16	0.9 0.01	0.1 0.01	0.13	30	Fe 0.01		120	23	62	0	USGS
4/15-22	8131			139	7.4	13 0.65	6.2 0.51	8.9 0.39	1.8 0.05	0 0.00	70 1.15	13 0.27	4.5 0.13	0.8 0.01	0.1 0.01	0.07	27	Fe 0.03		125	24	58	1	USGS
4/23-30	7084			148	7.6	14 0.70	5.6 0.46	8.2 0.36	2.1 0.05	0 0.00	76 1.25	7.7 0.16	4.0 0.11	0.6 0.01	0.2 0.01	0.06	28	Fe 0.03		112	23	58	0	USGS
5/1-18	8157			143	7.2	13 0.65	6.9 0.57	8.6 0.37	2.1 0.05	0 0.00	72 1.18	15 0.31	4.0 0.11	0.1 0.00	0.2 0.01	0.00	26	Fe 0.02; Al 0.04 Zn 0.03; Cu 0.01 <sup>a</sup>		114	23	61	2	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp. in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sulfate	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
			ppm		f	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957	AVERAGE MEAN DAILY																				
5/19-21	28,367			107	7.3	10.0 0.50	3.8 0.31	6.6 0.29	1.9 0.05	0.00	5.6 0.92	4.8 0.10	2.8 0.08	1.3 0.02	0.2 0.01	0.06	23	Fe 0.10			USGS
5/22-31	15,780			126	6.9	12.0 0.60	4.6 0.38	7.2 0.32	2.1 0.05	0.00	6.5 1.07	6.3 0.13	3.4 0.10	1.3 0.02	0.2 0.01	0.02	25	Fe 0.06			USGS
6/1-17	9039			134	7.1	12.0 0.60	5.0 0.41	8.1 0.35	2.0 0.05	0.00	7.1 1.16	4.4 0.09	3.3 0.09	1.1 0.02	0.2 0.01	0.01	27	Fe 0.10			USGS
6/18-30	6860			139	6.9	12.0 0.60	5.1 0.42	8.2 0.36	2.0 0.05	0.00	7.2 1.18	4.4 0.09	3.6 0.10	0.7 0.01	0.1 0.01	0.01	25	Fe 0.03			USGS
7/1-10	7116			126	7.1	11.0 0.55	5.5 0.45	7.8 0.34	1.9 0.05	0.00	7.0 1.15	5.8 0.12	4.0 0.11	0.3 0.00	0.0	0.0	26	Fe 0.02; Cu 0.02 Zn 0.05			USGS
7/11-20	6168			134	7.6	11.0 0.55	5.2 0.43	8.0 0.35	1.8 0.05	0.00	7.1 1.16	4.8 0.10	3.5 0.10	1.2 0.02	0.1 0.01	0.01	27	Fe 0.02			USGS
7/21-31	6919			134	7.1	11.0 0.55	5.2 0.43	7.6 0.33	1.7 0.04	0.00	6.9 1.13	4.2 0.09	3.6 0.10	1.4 0.02	0.1 0.01	0.01	29	Fe 0.02			USGS
8/1-11	6666			133	6.9	11.0 0.55	5.0 0.41	7.5 0.33	1.7 0.04	0.00	6.8 1.11	4.8 0.10	3.4 0.10	1.6 0.03	0.1 0.01	0.01	27	Fe 0.01			USGS
8/12-20	6110			132	7.7	11.0 0.55	5.2 0.43	7.5 0.33	1.7 0.04	0.00	6.8 1.11	5.8 0.12	3.4 0.10	1.2 0.02	0.1 0.01	0.01	28	Fe 0.01			USGS
8/21-31	6204			132	7.3	11.0 0.55	5.2 0.43	7.5 0.33	1.6 0.04	0.00	6.9 1.13	5.4 0.11	3.3 0.09	1.4 0.02	0.1 0.01	0.01	26	Fe 0.01			USGS
9/1-15	6197			134	7.1	11.0 0.55	5.7 0.47	7.3 0.32	1.7 0.04	0.00	6.8 1.11	7.7 0.16	4.0 0.11	1.3 0.02	0.1 0.01	0.01	27	Fe 0.01			USGS
9/16-27	12,167			133	6.7	9.6 0.48	6.3 0.52	7.6 0.33	1.6 0.04	0.00	7.1 1.16	6.7 0.14	3.5 0.10	0.1 0.00	0.2 0.01	0.10	24	Fe 0.01; Al 0.03 Zn 0.04			USGS
9/28-30				131	7.0	10.0 0.50	5.1 0.42	7.3 0.32	2.1 0.05	0.00	5.6 0.92	8.1 0.17	5.1 0.14	3.5 0.06	0.1 0.01	0.04	25	Fe 0.02			USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-11i

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C) f	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per-cent total - in ppm	Hardness as CaCO <sub>3</sub> ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>	
						equivalents per million												Total	N.C.				
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-trate (NO <sub>3</sub> )	Fluo-ride (F)								Boron (B)
1957	AVERAGE MEAN DAILY					SACRAMENTO RIVER AT BUTTE CITY (Sta. 87a) (Cont.)																	
10/1-5, 6, 12	10,215				133	9.2 0.46	6.3 0.52	7.4 0.32	1.9 0.05	0 0.00	66 1.08	4.8 0.10	5.0 0.14	0.7 0.01	0.1 0.01	0.00	25	Fe 0.02	93 <sup>c</sup>	24	49	0	USGS
10/13-14	21,100				88.5	8.0 0.40	5.8 0.48	5.2 0.26	1.7 0.04	0 0.00	56 0.92	4.8 0.10	4.5 0.13	1.2 0.03	0.1 0.01	0.08	21		82 <sup>b</sup>	22	44	0	USGS
10/15-31	11,870				142	8.8 0.44	7.5 0.62	7.7 0.33	2.0 0.05	0 0.00	68 1.11	5.8 0.12	5.5 0.16	1.4 0.02	0.2 0.01	0.00	25	Fe 0.02	103 <sup>c</sup>	23	53	0	USGS
11/1-13	9680				144	12 0.60	5.4 0.44	8.0 0.35	1.9 0.05	0 0.00	73 1.20	5.8 0.12	4.2 0.12	1.0 0.02	0.0 0.00	0.11	29	Fe 0.00	111 <sup>c</sup>	24	52	0	USGS
11/20-30	7057				161	13 0.65	5.7 0.47	8.2 0.36	1.9 0.05	0 0.00	75 1.23	2.9 0.06	8.0 0.23	1.4 0.02	0.0 0.00	0.05	21	Fe 0.02	123 <sup>c</sup>	24	56	0	USGS
12/1-4	6850				161	14 0.70	6.1 0.50	8.5 0.37	1.8 0.05	0 0.00	72 1.18	8.6 0.18	8.0 0.23	0.0 0.00	0.1 0.01	0.03	22	Fe 0.02	119 <sup>c</sup>	23	60	1	USGS
12/18, 22-31	6681				139	11 0.55	6.0 0.49	7.2 0.32	1.7 0.04	0 0.00	68 1.11	9.6 0.20	3.0 0.08	0.0 0.00	0.2 0.01	0.00	28	Fe 0.08	108 <sup>c</sup>	23	52	0	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS. Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or United States Dept. of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	Mineral constituents in parts per million												Total Dissolved solids in ppm <sup>b</sup>	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform <sup>d</sup> MPN/ml	Analyzed by <sup>e</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
			ppm	%Sat		Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Barium (Ba)	Silica (SiO <sub>2</sub> )			Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
1957										SACRAMENTO RIVER AT DELTA (STA. 11)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		</

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents.

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

<sup>f</sup> Field pH except when noted with <sup>a</sup>.

TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmohms at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm <sup>b</sup>	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform <sup>d</sup> MPN/ml	Analyzed by	
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents <sup>c</sup>
1957																								
	5070	41	12.1	95	150	7.3	13 0.65	5.6 0.46	9.2 0.40	1.6 0.04	0 0.00	86 1.41		5.0 0.14			0.07		55	0	1	USGS		
	4420	51	11.2	100	161	7.7	13 0.65	6.6 0.54	10 0.44	1.5 0.04	0 0.00	82 1.34		7.2 0.20			0.04		60	0	4	USGS		
	20,400	51	10.8	96	133	7.5	11 0.55	5.5 0.45	7.0 0.30	1.4 0.04	0 0.00	67 1.10		3.2 0.09			0.07		50	0	20	USGS		
	4980	59	9.9	97	151	7.5	14 0.70	7.9 0.65	7.7 0.33	1.2 0.03	0 0.00	76 1.25		4.8 0.14			0.06		68	6	3	USGS		
	7950	61	9.5	96	129	7.5	12 0.60	4.9 0.40	7.0 0.30	1.3 0.03	0 0.00	70 1.15	4.8 0.10	3.0 0.08	0.2 0.000.01	0.2 0.02		0.02		50	0	9	USGS	
	8220	63	10.0	103	123	7.5	12 0.60	3.9 0.32	6.9 0.30	1.3 0.03	0 0.00	67 1.10		3.0 0.08			0.08		46	0	4	USGS		
	7580	60	9.8	98	120	7.7		7.1 0.31			0 0.00	66 1.08		2.8 0.08			0.01		45	0	2	USGS		
	6620	59	9.4	93	118	7.5		6.8 0.30			0 0.00	66 1.08		2.8 0.08			0.00		52	0	2	USGS		
	6440	60	8.7	87	120	7.3	10 0.50	4.7 0.39	6.7 0.29	1.4 0.04	0 0.00	65 1.07	1.5 0.03	3.3 0.09	1.1 0.020.00	0.0 0.05		0.05		44	0	4	USGS	
10,400	56	9.9	94	128	7.3		5.9 0.26			0 0.00	66 1.08		4.0 0.11			0.03		49	0	3	Median 62	USGS		
10,500	54	10.2	94	132	7.3		7.1 0.31			0 0.00	70 1.15		4.5 0.13			0.05		52	0	2	Max. 7,000	USGS		
18,200	48	11.4	98	118	7.3		6.5 0.28			0 0.00	59 0.97		4.0 0.11			0.04		44	0	40	Min. 2.3	USGS		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.







TABLE B-14  
ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> Total in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by a
			ppm	% Sat			equivalents per million															
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)						
1957	Mean Daily																					
1/14 1105	7850	43	11.8	95	174	7.7	14 0.70	7.1 0.58	11 0.48	1.6 0.04	0 0.00	94 1.54	6.4 0.18			0.04		27	64	0	4	USGS
2/18 1020	5300	55	10.6	100	179	7.7	15 0.75	7.4 0.61	11 0.48	1.4 0.04	0 0.00	94 1.54	8.0 0.23		0.01		26	68	9	8	USGS	
3/11 1345	22,700	54	10.6	98	129	7.5	2.2 0.16	7.6 0.64	7.1 0.31	1.6 0.04	0 0.00	68 1.11	2.6 0.07		0.11		21	55	0	30	USGS	
4/15 0950	5020	62	9.4	96	187	7.5	18 0.90	8.0 0.66	9.8 0.43	1.3 0.03	0 0.00	95 1.56	7.3 0.21		0.08		21	78	0	20	USGS	
5/13 1100	10,200	62	8.7	88	188	7.5	15 0.75	6.2 0.51	14 0.61	1.4 0.04	0 0.00	88 1.44	7.8 0.22	0.5 0.01	0.1 0.01	0.09	24	Fe 0.06 Pb 0.01 Zn 0.04 PO <sub>4</sub> 0.05 a	63	0	27	USGS
6/21 1125	6120	75	8.1	95	199	7.8	15 0.75	9.4 0.77	15 0.65	1.4 0.04	0 0.00	94 1.54	7.7 0.22		0.04		29	76	0	35	USGS	
7/15 0845	5120	74	8.6	100	273	7.9			27 1.17		0 0.00	128 2.10	9.8 0.28		0.26		40	88	0	20	USGS	
8/19 0920	6010	73	8.2	94	233	7.7			20 0.87		0 0.00	96 1.57	10 0.28		0.04		35	81	2	15	USGS	
9/10 0920	7240	74	8.0	93	213	7.7	15 0.75	7.2 0.65	17 0.74	1.9 0.05	0 0.00	100 1.64	8.8 0.25	0.8 0.01	0.1 0.01	0.06	27	PO <sub>4</sub> 0.15 Fe 0.04 Al 0.03 a	70	0	20	USGS
10/16 1425	22,800	61	9.0	90	126	7.5			6.4 0.28		0 0.00	58 0.95	4.8 0.14		0.12		23	47	0	40 median 62		USGS
11/18 0920	17,500	51	10.1	93	128	7.3			6.5 0.26		0 0.00	64 1.05	4.8 0.14		0.00		21	52	0	25 Max. 7000		USGS
12/23 1215	21,700	48	10.7	92	154	7.3			10 0.44		0 0.00	76 1.23	9.0 0.25		0.26		27	60	0	20 Min. 2.3		USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{500}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

CENTRAL VALLEY REGION

Field pH except when noted with \*

TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C) f	Mineral constituents in parts per million										Total Dissolved solids in ppm g	Per- cent solum	Hardness of CaCO <sub>3</sub>		Tur- bid- ity in ppm	Caliform MPN/ml	Analyzed by e	
			ppm	%Sat		Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957	Average																						
	Mean																						
	Daily																						
5/29-31	12,830	7.3	185			14 0.70	6.8 0.56	13 0.57	1.3 0.03	0 0.00	86 1.41	15 0.31	7.0 0.20	0.8 0.01	0.0 0.00	0.26 24	Fe 0.18	63 0	137	31	USGS		
6/1-16	9250	7.2	209			14 0.70	8.0 0.66	17 0.71	1.8 0.05	0 0.00	94 1.54	13 0.27	9.0 0.25	1.6 0.03	0.2 0.01	0.11 28	Fe 0.01	68 0	138	34	USGS		
6/17-30	5830	7.1	186			14 0.70	7.8 0.64	16 0.70	1.8 0.05	0 0.00	90 1.48	12 0.25	9.5 0.27	1.5 0.02	0.1 0.01	0.15 30	Fe 0.02	67 0	132	33	USGS		
7/1-15	6040	7.2	199			14 0.70	6.8 0.56	16 0.70	1.8 0.05	0 0.00	92 1.51	13 0.27	8.0 0.23	1.5 0.02	0.1 0.01	0.16 29	Fe 0.02	63 0	135 <sup>b</sup>	35	USGS		
7/16-31	6210	7.3	209			14 0.70	9.0 0.74	17 0.71	1.7 0.04	0 0.00	96 1.57	17 0.35	8.0 0.23	1.1 0.02	0.1 0.01	0.16 28	Fe 0.01	72 0	143 <sup>b</sup>	33	USGS		
8/1-13	6090	7.3	219			15 0.75	8.9 0.73	18 0.78	1.7 0.04	0 0.00	104 1.70	19 0.40	9.0 0.25	1.3 0.02	0.1 0.01	0.15 31	Fe 0.01	74 0	151	34	USGS		
8/14-23	5850	7.3	236			16 0.80	10 0.84	22 0.96	1.8 0.05	0 0.00	116 1.90	17 0.35	11 0.31	1.1 0.02	0.1 0.01	0.18 29	Fe 0.01	82 0	163	36	USGS		
8/24/31	6020	7.3	257			16 0.80	10 0.86	22 0.96	2.0 0.05	0 0.00	118 1.93	17 0.35	12 0.34	1.0 0.02	0.1 0.01	0.14 28	Fe 0.00	83 0	161	36	USGS		
9/1-15	7020	7.2	250			14 0.70	11 0.90	21 0.91	2.1 0.05	0 0.00	116 1.90	18 0.37	10 0.28	0.2 0.00	0.3 0.02	0.16 26	Fe 0.02; Al 0.06; Zn 0.05; a	80 0	161	36	USGS		
9/16-22	7740	7.3	204			14 0.70	9.0 0.74	17 0.74	2.0 0.05	0 0.00	98 1.61	17 0.35	8.5 0.24	1.0 0.02	0.2 0.01	0.00 29	Fe 0.00	72 0	141	33	USGS		
9/23/28	7110	7.2	158			11 0.55	6.0 0.49	12 0.52	2.9 0.07	0 0.00	66 1.08	12 0.25	8.0 0.23	3.0 0.05	0.1 0.01	0.23 28	Fe 0.05	52 0	112	32	USGS		
9/29-30	12,850	7.0	191			12 0.60	7.8 0.64	16 0.70	2.3 0.06	0 0.00	74 1.21	17 0.35	12 0.34	2.3 0.04	0.1 0.01	0.14 29	Fe 0.15	62 1	134	35	USGS		
10/1-10	10,360	7.4	179			12 0.60	6.8 0.56	11 0.48	1.8 0.05	0 0.00	75 1.23	12 0.25	8.7 0.25	1.1 0.02	0.0 0.00	0.05 26	Fe 0.03	58 0	122	28	USGS		
10/11	11,700	7.5	120			10 0.50	5.4 0.44	6.0 0.26	1.5 0.04	0 0.00	56 0.92	8.8 0.18	4.0 0.11	1.8 0.03	0.12 27	Fe 0.00	47 1	118	21	USGS			
10/12-16	18,880	7.3	158			13 0.65	6.1 0.50	9.7 0.42	1.6 0.04	0 0.00	76 1.25	9.6 0.20	5.7 0.16	0.4 0.01	0.0 0.00	0.04 27	Fe 0.00	57 0	118	26	USGS		
10/17-19	16,330	7.1	125			11 0.55	4.5 0.37	6.2 0.27	1.5 0.04	0 0.00	58 0.95	5.8 0.12	4.8 0.14	1.7 0.03	0.0 0.00	0.09 22	Fe 0.08	46 0	99	22	USGS		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



[illegible]

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.  
Determined by addition of analyzed constituents  
Gravimetric determination.  
Annual median and range, respectively from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.  
Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.  
pH except when noted with \*



TABLE B-34

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Data and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by			
						equivalents												Silica (SiO <sub>2</sub> )							
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)				Barium (Ba)				Other constituents		
1957										SACRAMENTO RIVER NEAR REDDING (STA. 12a)															
1/15 1345	3800	52	10.8	98	136	7.0	12 0.60	4.2 0.40	7.9 0.34	1.5 0.04	0 0.00	60 0.98		2.7 0.08			0.01	25	50	1	10	USGS			
2/13 1100	2690	50	11.3	100	134	7.5	11 0.55	5.4 0.44	8.6 0.37	1.5 0.04	0 0.00	75 1.23		3.5 0.10			0.04	26	49	0	5	USGS			
3/15 1100	6390	48	11.1	96	126	7.3	9.6 0.48	6.1 0.50	7.4 0.32	1.4 0.04	0 0.00	66 1.08		3.2 0.09			0.06	24	49	0	2	USGS			
4/11 1400	2580	52	11.7	106	124	7.3	11 0.55	7.1 0.58	7.3 0.32	1.4 0.04	0 0.00	66 1.08		2.6 0.07			0.06	21	56	2	6	USGS			
5/16 0845	9270	52	11.4	103	117	7.2	10 0.50	4.3 0.35	6.9 0.30	1.1 0.03	0 0.00	61 1.00	6.7 0.14	0.0 0.00	0.6 0.01	0.2 0.01	26	86	43	0	20	USGS			
6/14 1130	7720	52	11.0	99	114	7.2	10 0.50	7.1 0.58	6.6 0.29	1.4 0.04	0 0.00	61 1.00		2.5 0.07			0.01	21	54	4	10	USGS			
7/15 1600	9560	52	11.0	99	112	7.3			6.4 0.28		0 0.00	62 1.02		2.1 0.06			0.04	26	40	0	6	USGS			
8/12 1020	8320	60	10.6	106	111	7.2			6.4 0.28		0 0.00	59 0.97		1.4 0.04			0.04	25	43	0	2	USGS			
9/10 1445	6780	60	11.5	115	108	7.7	11 0.55	3.4 0.28	5.2 0.23	1.5 0.04	0 0.00	60 0.98	3.8 0.08	2.3 0.06	0.2 0.00	0.1 0.01	25	83	42	0	4	USGS			
10/7 1600	7430	60	12.2	122	109	7.2			5.2 0.23		0 0.00	59 0.97		2.7 0.08			0.00	21	42	0	2	USGS			
11/13 1320	8920	56	9.6	91	121	7.2			7.1 0.31		0 0.00	64 1.05		3.8 0.11			0.24	26	45	0	5	USGS			
12/10 1350	8060	54	12.0	111	134	7.2			8.1 0.35		0 0.00	70 1.15		2.0 0.06			0.15	25	50		4	USGS			

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{90}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in equivalents per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )			Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								</

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with e

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Other constituents				
1957	Mean Daily				f																
1/11 1430	10,600	43	12.7	102	7.5	15 0.75	6.7 0.55	12 0.52	1.3 0.03	0 0.00	90 1.48		7.4 0.21			0.07		28	65	0	USGS
2/15 1420	10,100	52	11.6	105	7.4	14 0.70	6.7 0.55	9.8 0.43	1.2 0.03	0 0.00	80 1.31		6.2 0.19			0.06		25	62	4	USGS
3/22 1400	38,400	52	11.0	100	7.4	11 0.55	5.7 0.47	6.5 0.28	1.1 0.03	0 0.00	64 1.05		5.3 0.15			0.09		21	51	0	USGS
4/12 1545	15,800	60	9.6	96	7.3	12 0.60	5.8 0.48	6.1 0.27	0.9 0.02	0 0.00	64 1.05		5.3 0.15			0.00		20	54	2	USGS
5/10 1240	18,900	62	8.9	91	7.3	12 0.60	5.6 0.46	12 0.52	1.3 0.03	0 0.00	65 1.07	11 0.23	9 0.25	4.8 0.08	0.1 0.01	0.00	Fe 0.06 Al 0.07 Cu 0.01 Zn 0.02 PO <sub>4</sub> 0.10 a	32	53	0	USGS
6/19 0900	11,700	68	8.7	95	7.5	13 0.65	7.9 0.65	10 0.44	1.2 0.03	0 0.00	76 1.25		7.7 0.22			0.00		25	65	3	USGS
7/12 1035	8890	73	8.5	98	7.7			12 0.54		0 0.00	79 1.29		8.0 0.23			0.18		31	59	0	USGS
8/9 1210	9430	72	8.3	94	7.4			15 0.69		0 0.00	82 1.34		11 0.31			0.00		33	70	3	USGS
9/24 0715	12,700	67	8.6	93	7.6	13 0.65	6.6 0.54	11 0.48	1.5 0.04	0 0.00	80 1.31	8.6 0.18	7.5 0.21	0.2 0.00	0.0 0.00	0.04 0.01	PO <sub>4</sub> 0.15 Fe 0.01 Al 0.06 Zn 0.01 a	28	59	0	USGS
10/21 0830	17,900	58	9.2	89	7.5			11 0.48		0 0.00	80 1.31		8.9 0.25			0.10		28	61	0	USGS
11/25 0810	18,700	50	10.7	94	7.5			2.2 0.10		0 0.00	80 1.31		8.0 0.23			0.00		25	60	0	USGS
12/20 0950	38,000	49	10.6	92	7.3			6.2 0.27		0 0.00	51 0.84		5.5 0.16			0.02		24	42	0	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



Mineral analyses made by USGS, Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LAOWP), City of Los Angeles Dept. of Public Health (LAOPH), Long Beach Dept. of Public Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (microhmhos at 25°C)	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by <sup>c</sup>
					Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957	AVERAGE																			
	MEAN																			
1/3-10	10,590	7.5	164	7.5	14 0.70	6.6 0.54	10 0.41	1.3 0.03	0 0.00	82 1.34	5.8 0.12	6.5 0.18	0.8 0.01	0.2 0.01	0.12 25		113 <sup>c</sup> 26	0		USGS
1/11-14; 16-20	12,850	7.1	178	7.1	14 0.70	7.1 0.58	12 0.52	1.5 0.04	0 0.00	80 1.31	9.6 0.20	8.0 0.23	1.1 0.02	0.3 0.02	0.10 24		126 <sup>c</sup> 28	0		USGS
1/21-26	13,280	7.4	175	7.4	14 0.70	6.8 0.56	11 0.48	1.4 0.04	0 0.00	77 1.26	9.6 0.20	8.0 0.23	1.2 0.02	0.3 0.02	0.15 23		124 <sup>c</sup> 27	0		USGS
1/27-31	11,960	7.3	184	7.3	15 0.75	7.4 0.61	11 0.48	1.4 0.04	0 0.00	84 1.36	8.6 0.18	8.5 0.21	1.0 0.02	0.2 0.01	0.08 24		126 <sup>c</sup> 26	0		USGS
2/1-13	9940	7.3	177	7.3	15 0.75	6.9 0.57	11 0.48	1.4 0.04	0 0.00	83 1.36	8.6 0.18	7.5 0.21	0.8 0.01	0.2 0.01	0.04 23		120 <sup>c</sup> 26	0		USGS
2/14-20	10,460	7.4	159	7.4	14 0.70	6.3 0.52	9.4 0.41	1.4 0.04	0 0.00	77 1.26	7.7 0.16	6.0 0.17	0.5 0.01	0.2 0.01	0.04 23		110 <sup>c</sup> 25	0		USGS
2/22-23	14,550	7.3	151	7.3	13 0.65	6.4 0.53	8.1 0.35	1.2 0.03	0 0.00	74 1.21	5.8 0.12	5.5 0.16	0.5 0.01	0.2 0.01	0.05 21		105 <sup>c</sup> 22	0		USGS
2/24-25	32,500	7.1	112	7.1	11 0.55	4.0 0.33	5.2 0.23	1.1 0.03	0 0.00	55 0.90	3.8 0.08	3.0 0.08	0.8 0.01	0.2 0.01	0.06 17		88 <sup>c</sup> 20	0		USGS
2/27-28	65,250	7.0	62.8	7.0	6.0 0.30	2.4 0.20	2.4 0.10	0.9 0.02	0 0.00	29 0.48	1.9 0.04	1.0 0.03	0.7 0.01	0.2 0.01	0.03 11		41 <sup>(b)</sup> 16	1		USGS
3/1	65,200	7.0	75.8	7.0	7.2 0.36	2.9 0.21	3.3 0.11	1.0 0.03	0 0.00	35 0.57	2.9 0.06	1.5 0.04	0.6 0.01	0.2 0.01	0.05 13		50 <sup>(b)</sup> 18	1		USGS
3/6, 8-10	76,200	7.2	95.0	7.2	9.6 0.43	3.3 0.27	5.0 0.22	1.2 0.03	0 0.00	45 0.74	3.8 0.08	2.5 0.07	0.5 0.01	0.3 0.02	0.11 17		78 <sup>c</sup> 23	0		USGS
3/11-20	52,240	6.9	112	6.9	10 0.50	4.6 0.38	5.9 0.26	1.2 0.03	0 0.00	55 0.90	5.8 0.12	3.5 0.10	0.8 0.01	0.3 0.02	0.12 19		89 <sup>c</sup> 22	0		USGS
3/21-31	29,940	7.1	137	7.1	12 0.60	5.4 0.41	7.3 0.32	1.0 0.03	0 0.00	64 1.05	7.7 0.16	5.0 0.11	0.4 0.01	0.1 0.01	0.12 20		102 <sup>c</sup> 23	0		USGS
4/2-9	20,120	7.3	119	7.3	13 0.65	6.4 0.53	2.3 0.10	1.3 0.03	0 0.00	70 1.13	12 0.25	6.6 0.19	0.4 0.01	0.1 0.01	0.08 23		110 <sup>c</sup> 25	2		USGS
4/12-15	15,850	7.2	130	7.2	12 0.60	5.8 0.48	6.6 0.29	0.8 0.02	0 0.00	66 1.08	6.7 0.11	5.2 0.15	0.4 0.01	0.1 0.01	0.09 23		100 <sup>c</sup> 21	0		USGS
4/16	22,400	7.2	111	7.2	13 0.65	2.8 0.23	6.1 0.27	1.1 0.03	0 0.00	61 1.00	3.8 0.08	3.0 0.08	0.3 0.00	0.1 0.01	0.10 21		86 <sup>c</sup> 23	0		USGS
4/17-24	23,200	7.6	128	7.6	12 0.60	4.6 0.38	8.5 0.37	0.9 0.02	0 0.00	64 1.05	5.8 0.12	6.0 0.17	0.8 0.01	0.1 0.01	0.10 21		93 <sup>c</sup> 27	0		USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as <sup>0.0</sup> except as shown.  
b Determined by addition of analyzed constituents  
c Gravimetric determination  
d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.  
e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LAOWP), City of Los Angeles Dept. of Public Health (LAOPH), Long Beach Dept. of Public Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.  
f Field pH except when noted with \*



TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH*	Mineral constituents in parts per million										Total Dissolved Solids in ppm (c)	Percent Sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>		
						equivalents per million																	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )
1957	AVERAGE																						
4/25-30	18,450			131	7.0	12 0.60	4.6 0.38	8.5 0.37	0.9 0.02	0 0.00	63 1.03	8.6 0.18	5.5 0.16	0.4 0.01	0.1 0.01	0.1 0.08	21	Fe 0.03	94	27	49	0	USGS
5/1-7	16,110			143	7.2	10 0.50	6.8 0.56	9.4 0.41	1.5 0.04	0 0.00	66 1.08	9.6 0.20	6.5 0.18	0.1 0.00	0.2 0.01	0.2 0.09	23	Fe 0.03	108	27	53	0	USGS
5/8-18	19,590			158	7.6	12 0.60	6.8 0.56	12 0.52	1.6 0.04	0 0.00	76 1.25	13 0.27	7.0 0.20	0.2 0.00	0.0 0.00	0.07 0.00	24	Fe 0.07 Al 0.08 Pb 0.01a	111	30	58	0	USGS
5/19-31	48,620			101	7.2	9.6 0.48	3.6 0.30	6.0 0.26	1.5 0.04	0 0.00	51 0.84	5.8 0.12	3.0 0.08	0.2 0.00	0.2 0.01	0.2 0.00	23	Fe 0.07	85	24	39	0	USGS
6/1-15	22,750			136	6.9	11 0.55	5.5 0.45	9.3 0.40	1.6 0.04	0 0.00	65 1.07	6.3 0.13	5.5 0.16	1.1 0.02	0.1 0.01	0.1 0.05	21	Fe 0.02	100	28	50	0	USGS
6/16-30	10,840			167	7.0	13 0.65	6.4 0.53	12 0.52	1.8 0.05	0 0.00	77 1.26	9.4 0.20	7.8 0.22	0.9 0.01	0.1 0.01	0.2 0.02	23	Fe 0.01	111	30	59	0	USGS
7/1-21	9120			172	7.4	14 0.70	6.1 0.50	13 0.57	1.8 0.05	0 0.00	80 1.31	8.6 0.18	8.5 0.24	0.7 0.01	0.2 0.01	0.2 0.01	23	Fe 0.02	114	31	60	0	USGS
7/22	9780			164	7.7	13 0.65	6.3 0.52	12 0.52	1.6 0.04	0 0.00	74 1.21	11 0.23	7.8 0.22	0.6 0.01	0.1 0.01	0.1 0.14	23	Fe 0.03	111	30	58	0	USGS
7/23-25	9750			194	7.7	14 0.70	7.8 0.64	15 0.65	1.8 0.05	0 0.00	91 1.49	10 0.21	9.5 0.27	0.7 0.01	0.2 0.01	0.2 0.02	24	Fe 0.03	128	32	67	0	USGS
7/26-31	9770			173	7.7	13 0.65	7.1 0.58	12 0.52	1.6 0.04	0 0.00	81 1.33	9.0 0.19	8.3 0.23	0.6 0.01	0.2 0.01	0.2 0.01	23	Fe 0.03	111	29	62	0	USGS
8/1-2	9510			167	7.4	8.8 0.44	8.3 0.68	13 0.57	1.7 0.04	0 0.00	82 1.34	5.8 0.12	9.0 0.25	0.7 0.01	0.1 0.01	0.1 0.08	21	Fe 0.01	112	33	56	0	USGS
8/3-10	9510			224	7.2	19 0.95	5.0 0.41	15 0.65	1.8 0.05	0 0.00	92 1.51	9.6 0.20	13 0.37	0.8 0.01	0.1 0.01	0.1 0.15	24	Fe 0.01	130	32	68	0	USGS
8/11-20	9840			202	7.4	14 0.70	8.0 0.66	15 0.65	1.8 0.05	0 0.00	96 1.57	11 0.23	11 0.31	0.7 0.01	0.1 0.01	0.1 0.09	24	Fe 0.01	129	32	68	0	USGS
8/21-31	9840			214	7.6	15 0.75	8.4 0.69	16 0.70	1.8 0.05	0 0.00	100 1.64	11 0.23	12 0.34	0.6 0.01	0.1 0.01	0.1 0.24	23	Fe 0.02	134	32	72	0	USGS
9/1-10	10,550			228	7.4	15 0.75	8.9 0.73	18 0.78	1.8 0.05	0 0.00	110 1.80	5.8 0.12	14 0.39	1.4 0.02	0.1 0.01	0.1 0.39	24	Fe 0.00	143	34	74	0	USGS
9/11-19	12,330			237	6.9	14 0.70	9.6 0.79	17 0.74	1.8 0.05	0 0.00	104 1.70	13 0.27	10 0.28	0.3 0.00	0.1 0.01	0.1 0.13	24	Fe 0.02 Al 0.00 Zn 0.20a	156	32	74	0	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept of Water & Power (LAOWP), City of Los Angeles Dept of Pub Health (LAOPH), Long Beach Dept. of Pub. Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH <sup>*</sup>	Mineral constituents in parts per million										Total Dissolved solids in ppm (c)	Per-cent acid-ium	Hardness as CaCO <sub>3</sub> ppm	Tur-bid-ity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-trate (NO <sub>3</sub> )	Fluo-ride (F)	Boron (B)	Silico (SiO <sub>2</sub> )	Other constituents			
1957	AVERAGE																				
9/20-30	13,630			170	7.4	14 0.70	7.1 0.57	13 0.57	1.8 0.05	0 0.00	82 1.34	15 0.31	9.5 0.27	1.1 0.02	0.0 0.00	0.22	23	Fe 0.00			UJGJ
10/1-6	16,130			130	7.5	14 0.70	6.8 0.56	13 0.57	2.1 0.05	0 0.00	80 1.31	9.6 0.26	9.5 0.27	1.9 0.03	0.1 0.01	0.37	19	Fe 0.01			UJGJ
10/7-13	16,160			159	7.6	12 0.60	6.3 0.52	11 0.58	1.8 0.05	0 0.00	78 1.28	6.7 0.14	7.5 0.21	1.2 0.02	0.0 0.00	0.37	24	Fe 0.00			UJGJ
10/14-21	21,810			168	7.8	13 0.65	6.7 0.55	11 0.58	2.0 0.05	0 0.00	77 1.26	12 0.25	9.0 0.25	1.2 0.02	0.0 0.00	0.26	24	Fe 0.04			UJGJ
10/22-31	18,020			154	7.5	13 0.65	6.0 0.49	9.5 0.41	1.5 0.04	0 0.00	73 1.20	7.7 0.16	7.0 0.20	0.3 0.00	0.0 0.00	0.28	23	Fe 0.0			UJGJ
11/1-10	16,380			152	7.2	13 0.65	6.9 0.57	9.2 0.40	1.5 0.04	0 0.00	72 1.18	12 0.25	6.0 0.17	0.4 0.01	0.2 0.01	0.03	24	Fe 0.01	2		UJGJ
11/11-14	15,880			159	7.1	14 0.70	5.6 0.46	10 0.44	1.5 0.04	0 0.00	74 1.21	11 0.23	7.2 0.20	0.2 0.00	0.2 0.01	0.08	25	Fe 0.01			UJGJ
11/15-18	27,300			112	6.8	10 0.50	4.6 0.38	6.1 0.27	1.8 0.05	0 0.00	54 0.89	8.6 0.18	3.6 0.10	0.5 0.01	0.2 0.01	0.02	21	Fe 0.04			UJGJ
11/19-26	19,550			143	7.2	13 0.65	5.5 0.45	9.0 0.39	1.5 0.04	0 0.00	69 1.13	11 0.23	4.7 0.13	0.5 0.01	0.2 0.01	0.07	25	Fe 0.03			UJGJ
11/29-30	17,100			167	7.1	13 0.65	6.9 0.57	11 0.48	1.6 0.04	0 0.00	78 1.20	11 0.23	8.0 0.23	0.3 0.00	0.2 0.01	0.02	26	Fe 0.01			UJGJ
12/1-3, 5-10	15,280			157	7.5	7.2 0.36	10 0.84	10 0.44	1.7 0.04	0 0.00	81 1.33	3.8 0.08	7.0 0.20	0.6 0.01	0.2 0.01	0.04	25	Fe 0.02			UJGJ
12/11-17	15,400			159	7.1	10 0.50	8.0 0.66	10 0.44	1.9 0.05	0 0.00	80 1.31	6.7 0.14	6.0 0.17	0.6 0.01	0.2 0.01	0.08	25	Fe 0.02			UJGJ
12/18-23	35,380			112	7.0	2.4 0.12	8.8 0.72	6.2 0.27	1.5 0.04	0 0.00	55 0.90	5.8 0.12	4.0 0.11	0.7 0.01	0.3 0.02	0.00	20	Fe 0.05			UJGJ
12/24, 26-31	32,790			135	7.0	6.4 0.32	8.5 0.70	7.5 0.23	1.6 0.04	0 0.00	68 1.11	7.7 0.16	5.0 0.14	0.6 0.01	0.2 0.01	0.05	22	Fe 0.05			UJGJ

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (OWR), as indicated.

f Field pH except when noted with \*

TABLE B-14

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Analyzed by a					
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)						Barium (B)	Silica (SiO <sub>2</sub> )	Other constituents		
1957							SACRAMENTO RIVER AT SNODGRASS SLOUGH (Sta. 97)																			
1/11 1200	Tidal Area	46	11.9	100	182	7.5	14 0.70	7.3 0.60	13 0.57	1.4 0.04	0 0.00	86 1.41	7.3 0.15	9.6 0.27	1.0 0.02	0.0 0.00	0.12 0.00	22	Fe 0.00	118	30	65	0 2		USGS	
2/15 1300		51	11.2	100	172	7.3	14 0.70	6.7 0.55	11 0.48	1.3 0.03	0 0.00	82 1.34	9.6 0.20	8.2 0.23	1.1 0.02	0.1 0.01	0.01 0.01	21	Fe 0.01	113	27	62	0 12		USGS	
3/22 1300		52	10.9	99	115	7.3	10 0.50	5.8 0.48	5.8 0.25	0.9 0.02	0 0.00	57 0.93	9.6 0.20	3.5 0.10	0.7 0.01	0.2 0.01	0.00 0.01	20	Fe 0.11	85	20	49	2 15		USGS	
4/12 1250		61	8.9	90	143	7.5	13 0.65	5.5 0.45	7.7 0.33	1.0 0.03	0 0.00	68 1.11		6.5 0.18			0.01				23	55	0 10		USGS	
5/9 1320		63	10.1	104	151	7.3	13 0.65	4.4 0.36	10 0.44	1.1 0.03	0 0.00	66 1.08	7.5 0.16	8.8 0.25	0.7 0.01	0.2 0.01	0.02 0.01	18	Cu 0.01 Zn 0.02 PO <sub>4</sub> 0.20 Al 0.07	97	30	51	0 8		USGS	
6/14 0750		65	7.8	82	134	7.3	11 0.55	4.7 0.39	8.7 0.38	1.1 0.03	0 0.00	64 1.05		5.5 0.16			0.10				28	47	0 10		USGS	
7/15 0910		72	7.9	90	162	7.5			12 0.52		0 0.00	76 1.25		7.7 0.22			0.00				31	57	0 10		USGS	
8/9 1000		69	7.1	78	173	7.5			13 0.57		0 0.00	72 1.29		9.0 0.25			0.03				32	61	0 5		USGS	
9/12 1705		70	6.8	76	210	7.4	14 0.70	8.0 0.66	16 0.70	2.1 0.05	0 0.00	94 1.54	8.6 0.18	12 0.34	1.7 0.03	0.0 0.00	0.05 0.00	20	PO <sub>4</sub> 0.20 Fe 0.01 Al 0.02	128	33	68	0 6		USGS	
10/24 0900		59	9.0	89	156	7.5			8.6 0.37		0 0.00	90 1.48		4.5 0.13			0.00				22	64	0 11	Median 620		USGS
11/25 1040		51	10.3	91	135	7.3			7.4 0.32		0 0.00	70 1.15		4.9 0.14			0.00				24	52	0 5	Max. 7,000		USGS
12/13 0840		47	10.7	91	162	7.3			11 0.48		0 0.00	82 1.34		8.2 0.23			0.07				29	60	0 7	Min. 2.3		USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.0}$  except as shown.

by determined by addition of analyzed constituents.

Gravimetric determination.

Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Matropo

Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with a

TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
1957	Not Available																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												</

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents

<sup>c</sup> Gravimetric determination

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept of Water & Power (LADWP), City of Los Angeles Dept of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated

<sup>f</sup> Field pH except when noted with \*



TABLE B-14

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent solum	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by e	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957																								
1/14 1015	No Record	46	11.3	95	508	8.1	35 1.75	26 2.16	35 1.52	2.1 0.05	0 0.00	269 4.41		33 0.93		0.04		30	196	0	30	USGS		
2/18 0945	"	57	10.8	104	521	8.1	38 1.90	25 2.08	37 1.61	2.2 0.06	0 0.00	266 4.36		37 1.04		0.06		20	199	0	20	USGS		
3/11 1425	"	56	9.4	89	134	7.3	10 0.50	6.8 0.56	8.0 0.35	1.7 0.04	0 0.00	68 1.11		4.6 0.13		0.12		80	53	0	80	USGS		
4/15 0915	346	65	7.8	83	315	7.7	23 1.15	16 1.33	20 0.87	1.7 0.04	0 0.00	158 2.59		21 0.59		0.04		35	124	0	35	USGS		
5/13 1150	558	68	7.7	84	315	7.7	25 1.25	15 1.20	20 0.87	2 0.05	0 0.00	162 2.66	10 0.21	17 0.48	0.0 0.00	0.1 0.01	25 0.07	27	122	0	27	USGS		
6/21 1225	478	79	6.1	74	410	8.1	30 1.50	21 1.70	25 1.09	1.4 0.04	0 0.00	211 3.46		29 0.82		0.07		50	160	0	50	USGS		
7/15 0930	539	77	6.5	78	457	7.9		33 1.44	0 0.00	0 0.00	227 3.72		36 1.02		0.19			40	177	0	40	USGS		
8/19 1015	602	78	7.0	85	446	7.9		32 1.39	0 0.00	0 0.00	233 3.82		32 0.90		0.00			20	171	0	20	USGS		
9/10 1000	650	67	6.7	72	425	7.8	30 1.50	22 1.78	29 1.26	2.4 0.06	0 0.00	228 3.74	6.7 0.14	24 0.68	1.1 0.02	0.1 0.01	33 0.02	30	164	0	30	USGS		
10/16 1330	No Record	63	7.4	77	315	7.7		20 0.87	0 0.00	0 0.00	168 2.75		16 0.45		0.00			5	117	0	5	Median USGS 62		
11/18 1005	No Record	53	7.8	72	372	7.5		25 1.09	0 0.00	0 0.00	188 3.08		24 0.68		0.00			15	137	0	15	Max. 2,400		
12/23 1250	No Record	48	10.4	89	229	7.4		17 0.74	0 0.00	0 0.00	106 1.74		20 0.56		0.16			40	84	0	40	Min. 1.3		

0.0 except as shown.  
0.00

analyzed constituents.

c Gravimetric determination.

Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>a</sup> Mineral analyses made by USGS. Quality of Water Branch (USGS). Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), e Minor: incinerator ash, sewage sludge, metal smelter slag, copper refinery waste.

f Field pH except when noted with a

TABLE U-111  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
						equivalents per million															
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)						
1957	Average Mean Daily																				
1-16 1050	82	49		2196	8.3	83	52	301	4.7	0.0	194	398	398	3.2					1432	60	UJBL
2-14 0917	133	57		1392	8.1	58	31	198	1.6	0.0	154	230	217	2.5					860	61	UJBL
3-14 1410	106	60		1726	8.2	72	40	230	3.5	0.0	184	326	280	3.1					1134	59	UJBL
4-17 1145	137	60		1061	7.5	72	40	68	2.0	0.0	148	137	162	2.5					644	30	UJBL
5-17 1035	83	69		1014	7.4	46	26	103	3.9	0.0	142	100	172	1.9					620	49	UJBL
6-14 0830	68	65		767	7.4	38	21	86	2.7	0.0	133	80	136	2.6					500	50	UJBL
7-19 1035	100	71		766	7.1	41	21	81	3.5	0.0	132	78	119	2.5					468	48	UJBL
8-14 1500	123	83		894	7.8	40	21	92	2.3	0.0	134	80	134	2.5					498	51	UJBL
9-13 1235	73	73		908	7.6	47	20	98	3.1	0.0	146	94	148	0.6					560	51	UJBL
10-17 1040	62	63		843	7.3	47	23	76	3.1	0.0	170	56	125	1.0					448	43	UJBL
11-15 1030	30	60		2000	7.4	76	50	274	5.1	0.0	215	261	405	5.0					1278	60	UJBL
12-17 1000	59	54		1808	8.6	74	38	248	2.3	0.0	177	243	344	4.2					1130	61	UJBL

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept of Water & Power (LADWP), City of Los Angeles Dept of Pub Health (LADPH), Long Beach Dept of Pub Health (LBDPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total Dissolved solids in ppm <sup>b</sup>	Per cent solid - in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by a																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
			ppm	% Sat		equivalents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
1957									SAN JOAQUIN RIVER AT ANTIPOCH (Sta. 28)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in F	Dissolved oxygen ppm	Specific conductance (microhm/cm at 25°C)	pH <sup>a</sup>	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- ity in ppm	Caliform MPN/ml	Analyzed by <sup>e</sup>
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- onate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Flu- oride (F)	Boron Silica (B) (SiO <sub>2</sub> )	Other constituents				
1957	Average																				
	Mean																				
	Daily																				
	240																				
1/1-14		6.7	54.8			5.0 0.25	1.1 0.09	1.8 0.21	1.0 0.03	0 0.00	22 0.36	3.8 0.08	3.5 0.10	1.3 0.02	0.1 0.01	0.06 0.01	Fe 0.05	12 <sup>c</sup>	36	17	0
1/15-31	90	6.9	89.8			7.4 0.37	1.8 0.15	7.8 0.31	1.2 0.03	0 0.00	38 0.62	3.8 0.08	5.0 0.11	1.9 0.01	0.1 0.01	0.02 0.01	Fe 0.06	64 <sup>c</sup>	38	26	0
2/1-14	70	6.9	101			8.6 0.43	2.1 0.17	8.8 0.38	1.5 0.01	0 0.00	45 0.74	3.8 0.08	5.5 0.16	1.7 0.03	0.1 0.01	0.05 0.01	Fe 0.06	66 <sup>c</sup>	37	30	0
2/15-28	70	7.1	106			9.2 0.46	2.2 0.18	9.3 0.40	1.3 0.03	0 0.00	47 0.77	4.8 0.10	5.5 0.16	1.8 0.03	0.1 0.01	0.09 0.01	Fe 0.04	72 <sup>c</sup>	37	32	0
3/1-16	80	6.7	104			8.8 0.41	3.2 0.26	10 0.44	1.3 0.03	0 0.00	53 0.87	4.8 0.10	5.5 0.16	1.7 0.03	0.2 0.01	0.13 0.01	Fe 0.00	76 <sup>c</sup>	38	35	0
3/17-31	60	6.7	112			9.0 0.45	2.3 0.19	12 0.52	1.3 0.03	0 0.00	50 0.82	7.7 0.16	6.0 0.17	1.0 0.02	0.2 0.01	0.03 0.01	Fe 0.00	85 <sup>c</sup>	44	32	0
4/1-8	50	6.6	111			9.0 0.45	2.8 0.23	12 0.52	1.6 0.04	0 0.00	53 0.87	6.7 0.14	7.0 0.20	0.7 0.01	0.2 0.01	0.02 0.01	Fe 0.00	80 <sup>c</sup>	42	34	0
4/9-22	120	6.7	76.6			6.4 0.32	1.7 0.11	7.3 0.32	1.1 0.03	0 0.00	31 0.51	5.8 0.12	5.2 0.15	1.0 0.02	0.2 0.01	0.05 0.01	Fe 0.10	55 <sup>c</sup>	40	23	0
4/23-31	103	6.7	88.1			7.0 0.35	1.8 0.15	8.8 0.38	1.3 0.03	0 0.00	34 0.56	7.7 0.16	5.8 0.16	0.9 0.01	0.2 0.01	0.04 0.01	Fe 0.00	62 <sup>c</sup>	42	25	0
5/1-13	90	6.7	84.5			7.4 0.37	1.3 0.11	8.2 0.36	1.6 0.04	0 0.00	34 0.56	7.7 0.16	5.0 0.14	0.7 0.01	0.2 0.01	0.00 0.01	Zn 0.05 <sup>a</sup>	62 <sup>c</sup>	41	24	0
5/14-31	100	6.9	84.2			6.4 0.32	1.5 0.12	8.4 0.37	1.8 0.05	0 0.00	34 0.56	5.8 0.12	4.4 0.12	1.8 0.03	0.0 0.00	0.16 0.01	Fe 0.06	50 <sup>c</sup>	43	22	0
6/3-9	100	6.9	80.2			6.0 0.30	1.2 0.10	7.9 0.34	1.7 0.04	0 0.00	37 0.61	2.9 0.06	4.5 0.13	1.6 0.03	0.0 0.00	0.20 0.01	Fe 0.03	55 <sup>b)</sup>	44	20	0
6/10-12	330	6.7	52.6			4.4 0.22	0.5 0.04	6.2 0.27	1.6 0.04	0 0.00	21 0.34	1.9 0.04	1.0 0.11	1.9 0.03	0.0 0.00	0.25 0.01	Fe 0.03	40 <sup>c)</sup>	47	13	10
6/13-30	100	6.7	73.0			5.2 0.26	1.2 0.10	6.4 0.26	1.7 0.04	0 0.00	34 0.56	1.0 0.02	2.8 0.08	1.4 0.02	0.2 0.01	0.31 0.01	Fe 0.08	62 <sup>c</sup>	41	18	0
7/1-10	120	6.7	71.1			4.6 0.23	1.3 0.11	7.3 0.32	1.7 0.04	0 0.00	27 0.44	2.9 0.06	5.5 0.16	1.0 0.02	0.0 0.00	0.11 0.01	Fe 0.02	46 <sup>c</sup>	46	17	0
7/11-20	110	7.0	72.1			5.0 0.25	1.2 0.10	6.7 0.29	1.3 0.03	0 0.00	29 0.48	1.0 0.02	5.2 0.15	1.1 0.02	0.0 0.00	0.07 0.01	Fe 0.01	53	43	15	0

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*



TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (c)	Per cent sodium	Hardness as CaCO <sub>3</sub>	Turbidity in ppm	Coliform MPN/ml	Analyzed by
						equivalents per million															
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)						
1957	Average																				
7/21-31	Mean Daily 110			73.2	6.7	5.7 0.28	1.0 0.08	6.7 0.29	1.3 0.03	0 0.00	29 0.18	1.0 0.02	4.8 0.14	0.8 0.01	0.0 0.00	0.02 0.00	8.5 0.02	Fe 0.01		USGS	
8/1-10	100			74.1	6.7	6.1 0.30	0.7 0.06	6.7 0.29	1.3 0.03	0 0.00	30 0.19	1.5 0.03	5.4 0.15	0.7 0.01	0.0 0.00	0.05 0.00	9.5 0.02	Fe 0.00		USGS	
8/11-31	100			75.6	6.5	6.5 0.32	0.6 0.05	7.0 0.30	1.5 0.04	0 0.00	30 0.19	1.5 0.03	5.1 0.11	1.0 0.02	0.1 0.01	0.03 0.01	10 0.02	Fe 0.00		USGS	
9/1-15	80			79.6	6.7	5.2 0.26	1.8 0.15	7.9 0.34	1.5 0.04	0 0.00	31 0.56	3.8 0.08	5.0 0.11	0.4 0.01	0.2 0.01	0.06 0.01	10 0.02	Zn 0.01 a		USGS	
9/16-30	90			76.9	7.0	5.7 0.28	1.2 0.10	7.2 0.31	1.3 0.03	0 0.00	33 0.54	1.9 0.04	4.6 0.13	0.6 0.01	0.0 0.00	0.03 0.00	11 0.02	Fe 0.00		USGS	
10/1-22	80			81.9	6.9	6.7 0.33	1.2 0.10	7.2 0.31	1.3 0.03	0 0.00	35 0.51	1.0 0.02	4.8 0.11	0.5 0.01	0.1 0.01	0.00 0.01	12 0.02	Fe 0.01		USGS	
10/23-25	80			119	7.2	10 0.50	2.1 0.17	8.0 0.35	1.5 0.04	0 0.00	41 0.67	2.9 0.06	15 0.12	0.1 0.00	0.1 0.01	0.00 0.01	12 0.02	Fe 0.09		USGS	
10/26-31	70			97.0	7.3	7.8 0.39	2.1 0.17	8.3 0.36	1.5 0.04	0 0.00	41 0.67	2.3 0.05	9.6 0.27	0.3 0.00	0.1 0.01	0.02 0.01	12 0.02	Fe 0.01		USGS	
11/1-20	70			92.3	6.8	11.4 0.22	3.1 0.28	8.2 0.36	1.6 0.04	0 0.00	42 0.69	0.0 0.00	6.5 0.18	0.8 0.01	0.2 0.01	0.00 0.01	13 0.02	Fe 0.02		USGS	
11/24, 23-28	70			92.3	6.8	6.8 0.31	1.9 0.16	8.3 0.36	1.5 0.04	0 0.00	42 0.69	0.0 0.00	6.0 0.17	1.1 0.02	0.2 0.01	0.00 0.01	11 0.02	Fe 0.02		USGS	
11/29	68			198	6.8	20 1.00	1.0 0.08	8.0 0.35		0 0.00	45 0.71						54			USGS	
11/30-12/17	70			103	6.8	8.0 0.40	2.2 0.18	9.1 0.40	1.6 0.04	0 0.00	44 0.72	3.8 0.08	6.0 0.23	0.6 0.01	0.0 0.00	0.00 0.00	13 0.02	Fe 0.03		USGS	
12/18-20, 22	180			67.6	7.1	5.0 0.25	1.2 0.10	6.3 0.27	1.6 0.04	0 0.00	28 0.46	3.8 0.08	4.1 0.12	1.3 0.02		0.00 0.00	11 0.02	Fe 0.04		USGS	
12/23-26, 28-31	60			107	6.9	7.8 0.39	1.9 0.16	11 0.48	1.8 0.05	0 0.00	48 0.79	4.4 0.09	6.0 0.17	2.6 0.04	0.0 0.00	0.00 0.00	13 0.02	Fe 0.02		USGS	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-11

ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>	Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>
			ppm	% Sat		Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957	Not listed								SAN JOAQUIN RIVER AT BRANIFF BRIDGE (Sta. 101a)												
3-1 1115	60				747			74					114								UJER
5-27 1315	70				244			24					34								USBR
8-28 1110	74				662			72					100								USBR
11-27 1300	54				495			49					80								USBR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{50}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> in ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>a</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
							equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (B)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
1957	Not Rated									SAN JOAQUIN RIVER AT CROSS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LAOWP), City of Los Angeles Dept of Pub Health (LAOPH), Long Beach Dept of Pub Health (LBDPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (OWR), as indicated.

f Field pH except when noted with \*

TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhm-cm at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent solid - um	Hardness as CaCO <sub>3</sub>		Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			ppm	% Sat			equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
							Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)			Baron (B)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
1957	Mean Daily									SAN JOAQUIN RIVER	NEAR DOS PALOS (STA. 252)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{90}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.



TABLE B-14

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	pH*	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent solum	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents

1957	AVERAGE MEAN DAILY																					
1/1 - 7	72			2170	7.9	84 4.13	50 2.10	291 12.66	4.0 0.10	0.0 0.00	204 3.34	223 4.64	152 12.75	3.1 0.05	0.2 0.01	0.66	33	1330	60	416	249	USGS
1/8 - 17	230			1280	7.0	50 2.50	29 2.10	166 7.22	4.0 0.10	0.0 0.00	191 3.13	116 3.04	200 5.64	3.1 0.05	0.4 0.02	0.58	26	775	59	245	88	USGS
1/18 - 31	190			1490	7.1	58 2.39	35 2.87	197 8.57	3.6 0.09	0.0 0.00	184 3.02	188 3.91	250 7.05	4.8 0.08	0.3 0.02	0.93	26	909	59	288	137	USGS
2/1 - 9	170			1640	7.0	62 3.09	40 3.25	219 9.53	4.0 0.10	0.0 0.00	190 3.11	219 4.56	288 8.12	3.3 0.05	0.3 0.02	1.1	26	1010	60	317	161	USGS
2/11	291			1150	7.2	54 2.69	22 1.83	147 6.39	3.6 0.09	0.0 0.00	140 2.29	230 4.79				0.99			226			USGS
2/12 - 15	1270			831	7.8	42 2.10	18 1.50	97 4.22	3.4 0.09	0.0 0.00	130 2.13	89 1.85	137 3.86	4.2 0.07	0.0 0.00	0.50	25	827	57	276	132	USGS
2/16 - 26	260			1350	7.8	59 2.94	31 2.58	171 7.44	4.0 0.10	0.0 0.00	175 2.87	173 3.66	231 6.51	2.3 0.04	0.0 0.00	0.94	23	655	56	225	66	USGS
2/27 - 28	300			1070	8.0	49 2.45	25 2.05	133 5.79	3.8 0.10	0.0 0.00	194 3.18	118 2.46	170 4.79	2.4 0.04	0.0 0.00	0.66	25	560	55	198	60	USGS
3/1 - 3	360			919	6.9	46 2.30	20 1.66	114 4.96	3.6 0.09	0.0 0.00	168 2.73	98 2.04	144 4.06	2.9 0.05	0.5 0.03	0.50	24					USGS
3/4	695			627	6.6	33 1.65	17 1.13	70 3.04		0.0 0.00	148 2.43							484		154	33	USGS
3/5 - 9	1510			908	6.7	48 2.10	22 1.82	103 4.48	3.4 0.09	0.0 0.00	146 2.39	96 2.00	152 4.29	3.8 0.06	0.4 0.02	0.50	29	551	51	211	91	USGS
3/10 - 31	320			1230	6.7	61 3.04	30 2.44	149 6.48	4.0 0.10	0.0 0.00	178 2.92	116 3.04	206 5.81	3.1 0.05	0.4 0.02	0.80	26	754	54	274	128	USGS
4/1 - 6	290			1110	6.8	56 2.79	25 2.05	131 5.70	3.4 0.09	0.0 0.00	161 2.66	121 2.52	191 5.39	4.0 0.06	0.4 0.02	0.60	26	666	54	242	110	USGS
4/7 - 17	220			1320	6.8	65 3.24	31 2.52	154 6.70	3.8 0.10	0.0 0.00	171 2.80	113 2.98	243 6.85	3.4 0.05	0.4 0.02	0.64	26	796	53	288	118	USGS
4/18 - 30	460			653	6.7	31 1.55	18 1.47	70 3.04	2.6 0.07	0.0 0.00	124 2.05	62 1.29	104 2.93	2.6 0.04	0.4 0.02	0.27	23	385	50	151	49	USGS
a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.00}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LAOWP), City of Los Angeles Dept. of Pub Health (LAOPH), Long Beach Dept. of Pub Health (LBOPH), or State Division of Water Resources (SDWR), as indicated.

f Field pH except when noted with \*

TABLE B-11

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (microhmhos of 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents

1957	AVERAGE MEAN DAILY						SAN JOAQUIN RIVER AT FREEMONT	BRIDGE	(STA. 25c) (Cont.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
------	--------------------	--	--	--	--	--	-------------------------------	--------	--------------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH), or State Division of Water Resources (DWR), as indicated.

f Field pH except when noted with e

TABLE 11-B  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH*	Mineral constituents in parts per million										Total dissolved solids in ppm	Per-cent solum	Hardness as CaCO <sub>3</sub> ppm	Tur-bid-ity in ppm	Caliform <sup>d</sup> MPN/ml	Analyzed by e																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Baron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1957	AVERAGE MEAN DAILY							SAN JOAQUIN RIVER AT FRESNO BRIDGE STA. 256 (Cont.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LAOWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBOPH), or State Division of Water Resources (OWR), as indicated.

f Field pH except when noted with \*



TABLE B-24

## ANALYSES OF SURFACE WATER

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent total in ppm	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat		Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents
1957																								
1/7 1610	233	48	12.3	106	33.2	6.9	2.8 0.14	0.4 0.03	2.7 0.12	0.5 0.01	0 0.00	13 0.21		2.2 0.06		0.00			8	0	1	USGS		
2/18 1600	56	53	11.9	109	45.9	6.9	4.0 0.20	0.5 0.04	4.3 0.19	0.7 0.02	0 0.00	17 0.28		3.5 0.10		0.07			12	0	1	USGS		
3/19 0815	58	46	11.5	96	47.8	6.7	4.0 0.20	1.2 0.10	4.0 0.17	0.6 0.02	0 0.00	19 0.31		4.4 0.12		0.06			15	0	2	USGS		
4/8 1605	183	52	11.6	105	42.2	7.1	3.9 0.19	0.6 0.05	3.6 0.16	0.6 0.02	0 0.00	19 0.31		3.2 0.09		0.00			12	0	2	USGS		
5/13 1425	133	55	11.9	112	43	7.3	3.6 0.18	0.2 0.02	4.0 0.17	0.6 0.02	0 0.00	16 0.26	0.0 0.00	3.9 0.11	0.8 0.01	0.1 0.01	0.04 0.15	11 0.00	10	0	1	USGS		
6/12 0800	157	53	11.2	103	43.4	6.9	3.6 0.18	0.1 0.01	4.0 0.17	0.6 0.02	0 0.00	16 0.26		2.4 0.07		0.00			10	0	2	USGS		
7/9 1345	169	58	11.7	114	43.3	7.0		4.0 0.17			0 0.00	15 0.25		2.8 0.08		0.17			17	5	1	USGS		
8/5 1600	154	59	11.1	109	44.7	7.3		4.3 0.19			0 0.00	17 0.28		4.2 0.12		0.04			23	9	0.8	USGS		
9/25 0620	113	48	10.7	92	47.1	6.9	3.9 0.19	0.0 0.00	4.3 0.19	1.1 0.03	0 0.00	20 0.33	0.0 0.00	2.5 0.07	0.3 0.00	0.0 0.00	0.04 0.01	9.8 0.02	9	0	2	USGS		
10/15 0850	98	49	11.2	98	45	6.9		3.8 0.17			0 0.00	22 0.36		3.0 0.08		0.04			15	0	2	USGS		
11/19 1605	72	51	11.5	103	44.7	7.0		4.4 0.19			0 0.00	20 0.33		4.0 0.11		0.00			13	0	2	USGS		
12/17 0900	455	49	11.4	99	42.3	6.9		3.8 0.17			0 0.00	18 0.30		4.0 0.11		0.00			11	0	0.6	USGS		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm <sup>b</sup>	Per cent sodium	Hardness as CaCO <sub>3</sub>		Tur- bid- MPN/ml	Coliform <sup>d</sup> MPN/ml	Analyzed by e
			ppm	% Sat			equivalents per million																
							Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)			Boron (B)	Silica (SiO <sub>2</sub> )			
1957							SAN JOAQUIN RIVER AT GARWOOD BRIDGE (STA. 101)																
1/14 1530	Tidal Area	49	9.5	83	634	7.5	32 1.60	16 1.32	70 3.04	3.0 0.08	0 120 1.97		110 3.10			0.15		50	146	48	7	USGS	
2/13 1630		52	9.4	85	757	7.5	35 1.75	19 1.55	90 3.92	3.2 0.08	0 133 2.18		130 3.67			0.35		54	165	56	9	USGS	
3/11 1640		60	8.3	83	652	7.5	35 1.75	15 1.25	72 3.13	4.0 0.10	0 119 1.95		104 2.93			0.22		50	150	52	20	USGS	
4/15 1700		66	9.6	102	548	8.3	30 1.50	15 1.20	57 2.48	6.7 0.17	0 141 2.31		77 2.17			0.18		46	135	19	15	USGS	
5/7 1535		72	10.0	114	532	8.1	31 1.55	13 1.03	55 2.39	4.0 0.10	0 142 2.33	28 0.58	78 2.20	2.0 0.03	0.2 0.01	0.14	21	Al 0.14 Cu 0.01 PO <sub>4</sub> 1.20 Zn 0.01 a	302	129	13	4	USGS
6/18 1350		74	9.8	114	298	7.9	18 0.90	7.8 0.64	29 1.26	2.0 0.05	0 80 1.31		40 1.13			0.19		44	77	11	20	USGS	
7/16 1315		80	8.4	103	521	8.1		58 2.52			0 138 2.26		79 2.23			0.07		51	122	9	25	USGS	
8/20 0730		76	0.5	5.8	618	7.5		72 3.13			0 186 3.05		93 2.62			0.35		53	138	0	2	USGS	
9/10 0745		82	3.1	39	745	7.5	38 1.90	16 1.34	87 3.78	6.4 0.16	0 183 3.00	26 0.54	122 3.44	1.0 0.02	0.3 0.02	0.26	20	PO <sub>4</sub> 1.10 a Fe 0.01 Al 0.09	407	162	12	2	USGS
10/18 1310		61	7.7	77	423	7.5		45 1.96			0 100 1.64		64 1.80			0.19		51	96	14	8	USGS	
11/26 1620		54	9.8	91	426	7.5		46 2.00			0 82 1.34		69 1.95			0.00		52	93	26	5	USGS	
12/13 1515		49	9.7	85	390	7.3		43 1.87			0 82 1.34		61 1.72			0.09		52	86	19	10	USGS	

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents.

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

<sup>f</sup> Field pH except when noted with \*.

TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total Dissolved Solids in ppm <sup>b</sup>	Percent Sodium in ppm	Hardness as CaCO <sub>3</sub> Total in ppm	Turbidity in ppm	Coliform <sup>d</sup> MPN/ml	Analyzed by <sup>e</sup>
					Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957																				
1/10 1425	608	49	12.2	107	1150	7.9	50 2.50	28 6.44	148 0.10	4.0 0.00	240 3.93	191 5.39			0.34		57	240	43	USGS
2/21 0910	634	58	8.8	86	1120	7.5	51 2.54	38 3.16	138 6.00	3.4 0.09	190 3.11	170 4.79			0.60		51	285	129	USGS
3/21 1430	1310	59	11.0	108	704	8.1	32 1.60	18 1.48	80 3.48	2.4 0.06	130 2.13	102 2.88			0.45		53	154	47	USGS
4/11 1430	477	65	13.6	143	1080	8.4	48 2.40	30 2.44	130 5.66	2.8 0.07	168 2.75	179 5.05			0.39		54	242	104	USGS
5/16 1425	673	72	13.7	155	836	8.3	40 2.00	19 1.56	104 4.52	3.0 0.08	151 2.47	131 3.69	1.8 0.03	0.2 0.02	0.18		485	178	54	USGS
6/13 0750	1650	70	8.0	89	284	7.5	17 0.85	5.4 0.44	29 1.26	1.8 0.05	72 1.18	36 1.02			0.00		48	64	55	USGS
7/11 1415	450	81	13.8	171	971	8.5			119 5.18		151 2.47	159 4.48			0.28		54	220	96	USGS
8/8 1320	450	76	12.4	146	910	8.3			115 5.00		163 2.67	146 4.12			0.26		56	194	60	USGS
9/27 0725	810	68	7.9	86	815	7.9	39 1.95	18 1.49	101 4.39	3.8 0.10	82 1.71	128 3.61	3.1 0.05	0.2 0.01	0.09		479	172	44	USGS
10/17 1435	805	70	9.7	108	1010	7.9			118 5.13		184 3.02	162 4.57			0.26		55	210	59	USGS
11/22 0900	370	52	9.2	83	1270	7.7			156 6.79		208 3.41	218 6.15			0.19		56	270	99	USGS
12/19 1035	560	53	8.8	81	1130	7.7			142 6.18		211 3.46	192 5.41			0.25		57	230	57	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Specific conductance (micromhos at 25°C)	pH*	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> Total N.C. ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>
					Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957	Not Available										SAN JOAQUIN RIVER AT HILLS FERRY BRIDGE (Sta. 25b)									
1-17 0926	49		1373	8.5	43	38	179	4.2	6.6	191	210	213	1.9				864	59		USBR
2-13 1415	56		853	7.8	29	18	106	0.0	0.0	122	114	135	2.5				494	57		USBR
3-15 0925	57		1187	8.1	60	21	150	2.7	0.0	160	147	196	2.5				748	58		USBR
4-17 1100	61		1349	7.9	57	32	150	2.0	0.0	188	164	197	3.1				810	54		USBR
5-16 1215	70		1051	7.6	49	22	124	1.2	0.0	151	124	169	1.2				638	56		USBR
6-13 1235	72		362	6.8	18	8.2	39	0.0	0.0	63	42	53	0.0				244	52		USBR
7-18 1215	78		1076	7.0	50	25	124	3.5	0.0	153	115	184	2.5				654	54		USBR
8-15 0935	74		1059	8.2	45	25	110	2.0	0.0	145	106	167	0.6				574	53		USBR
9-12 1235	72		1155	7.6	41	34	124	2.0	0.0	158	134	198	0.6				714	54		USBR
10-16 1310	67		1228	7.5	46	26	146	3.1	0.0	139	141	187	4.2				634	58		USBR
11-14 1135	60		1401	7.5	59	35	184	2.3	0.0	171	164	270	0.0				880	58		USBR
12-16 1335	56		1804	8.8	70	44	255	2.0	11	189	249	331	3.7				1120	61		USBR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LAOWP), City of Los Angeles Dept. of Pub. Health (LAOPH), Long Beach Dept. of Pub. Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-11a

## ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Specific conductance (micromhos at 25°C)	pH*	Mineral constituents in parts per million equivalents per million										Total Dissolved Solids in ppm	Per-cent Sodium in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Tur-bid-ity in ppm	Coliform MPN/ml	Analyzed by <sup>b</sup>
			Dissolved oxygen ppm			Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-tro-ate (NO <sub>3</sub> )	Fluo-ride (F)	Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents		
1957	Not Rated																			
2-28 1200	55		323																	USBR
5-29 1035	63		167																	USBR
6-27 0940	74		191																	USBR
8-1 1055	71		1325																	USBR
8-29 1130	70		909																	USBR
9-26 1025	70		300																	USBR
10-31 1005	63		227																	USBR
11-27 1105	56		248																	USBR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultation (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH).

f Long Beach Dept. of Pub Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (OWR), as indicated.

g Field pH except when noted with \*



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million equivalents per million								Total Dissolved Solids in ppm	Percent acid-soluble in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Tur- bid- ity in ppm	Caliform d MPN/ml	Analyzed by a
			ppm	% Sat			Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carban- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluor- ide (F)	Boron (B)	Other constituents		
1957																				
1/10 1510	1490	49	11.0	96	747	7.5	36 1.80	16 1.28	88 3.83	2.8 0.07	0	122 2.00		142 4.00			0.12			USGS
2/21 1150	1200	57	8.9	86	867	7.5	42 2.10	20 1.66	107 4.65	4.0 0.10	0	140 2.29		150 4.23			0.43			USGS
3/21 1500	3250	54	10.9	101	305	7.5	14 0.70	8.8 0.72	31 1.35	1.6 0.04	0	59 0.97		45 1.27			0.19			USGS
4/11 1505	800	66	11.7	125	1040	8.1	54 2.69	25 2.03	115 5.00	5.0 0.13	0	155 2.54		205 5.78			0.33			USGS
5/16 1500	940	72	13.9	158	852	8.3	45 2.25	18 1.47	107 4.65	4.0 0.10	0	150 2.46	61 1.27	154 4.34	4.0 0.06	0.4 0.02	0.22	24	Fe 0.02 Al 0.20 Zn 0.04 PO <sub>4</sub> 0.40	USGS
6/13 0830	2300	70	7.5	83	298	7.3	18 0.90	6.0 0.49	28 1.22	2.0 0.05	0	72 1.18		42 1.18			0.03			USGS
7/11 1445	760	81	14.1	175	930	8.5			110 4.78		0	182 2.98		172 4.85			0.26			USGS
8/8 1422	710	76	11.8	138	885	8.3			105 4.57		0	157 2.57		165 4.65			0.25			USGS
9/27 0755	1010	70	7.5	83	822	7.9	43 2.15	17 1.39	92 4.00	5.0 0.13	0	157 2.57	55 1.15	140 3.95	2.9 0.05	0.0 0.00	0.03	23	PO <sub>4</sub> 0.50 Fe 0.01 Al 0.10 Zn 0.01	USGS
10/17 1510	1880	69	7.7	85	508	7.5			53 2.31		0	96 1.57		82 2.31			0.23			USGS
11/22 0930	2040	55	9.1	86	442	7.9			56 2.44		0	75 1.23		74 2.09			0.00			USGS
12/19 1115	2070	53	9.3	85	518	7.3			58 2.52		0	93 1.52		88 2.48			0.03			USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.00}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14  
ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent solid in ppm	Hardness as CaCO <sub>3</sub> ppm	Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by a
			ppm	% Sat		Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)	Baron (B)	Silica (SiO <sub>2</sub> )	Other constituents			
1957	Mean Daily																				
1/7 1310	33	48	12.5	107	73.9	5.2 0.26	1.6 0.13	6.9 0.30	0.9 0.02	0	28 0.46					0.00					USGS
2/18 1335	42	58	10.9	106	752	38 1.90	18 1.46	87 3.78	2.8 0.07	0	122 2.00					0.32					USGS
3/18 1520	192	61	10.9	110	662	32 1.60	17 1.42	72 3.13	3.4 0.09	0	119 1.95					0.39					USGS
4/8 1320	314	65	9.7	103	737	41 2.05	20 1.68	75 3.26	3.1 0.08	0	107 1.75					0.27					USGS
5/13 1130	265	70	9.5	106	549	32 1.60	13 1.09	58 2.52	2.5 0.06	0	103 1.69	49 1.02		1.4 0.02	0.2 0.01	0.13	17	Fe 0.14 Cr 0.02 Zn 0.02 PO <sub>4</sub> 0.35			USGS
6/10 1320	342	72	8.3	94	200	13 0.65	4.3 0.35	19 0.83	1.7 0.04	0	52 0.85					0.00					USGS
7/10 0800	464	76	7.9	93	411			37 1.61		0	90 1.48					0.26					USGS
8/5 1250	467	77	7.7	92	390			39 1.70		0	89 1.46					0.15					USGS
9/24 1400	406	75	8.8	103	686	36 1.80	16 1.28	74 3.22	4.0 0.10	0	137 2.25	50 1.04		1.3 0.02	0.1 0.01	0.19	26	Zn 0.01 PO <sub>4</sub> 0.35 Fe 0.05 Al 0.16 Cu 0.02			USGS
10/14 1430	63	71	10.6	119	653			72 3.13		0	140 2.29					0.17				Median 23	USGS
11/19 1345	46	60	11.5	115	639			71 3.09		0	112 1.84					0.13				Max. 7,000	USGS
12/16 1500	42	56	11.0	104	556			63 2.74		0	88 1.44					0.22				Min. 1.3	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LAOWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBOPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with a

TABLE B-11  
ANALYSES OF SURFACE WATER

CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhm/cm at 25°C)	pH *	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per-cent sodium	Hardness as CaCO <sub>3</sub>		Tur-bid-ity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
			ppm	%Sat			Calcium (Ca)	Magna-sium (Mg)	Sodium (Na)	Potos-ium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chlo-ride (Cl)	Ni-trate (NO <sub>3</sub> )	Fluo-ride (F)			Baran (B)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
1957	Not Avail-able												SAN JUAQUIN RIVER ABOVE MERCED RIVER (Sta. 30a)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.00}$  except as shown.

Determined by addition of analyzed constituents.

**Gravimetric determination.**

Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

Mineral analyses made by IISGS. Quality of Water Branch (IISGS) Pacific Chemical Consultant (PCC) Metropolitan Water District (MWD) Los Angeles Dept of

Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

Field pH except when noted with a



TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (microhms at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>			
						ppm	% Sat	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)			Nitrate (NO <sub>3</sub> )	Fluoride (F)				Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents
1957	Not Rated									SAN JOAQUIN RIVER AT PATTERSON WATER COMPANY (Sta. 27a)															
1-17 1015		50		1072	8.2	45	24	132	3.2	0.0	186	149	151	3.1					660	57	USBR				
2-13 1300		56		722	8.1	32	17	91	0.0	0.0	113	84	109	3.1					420	57	USBR				
3-15 1030		57		706	8.2	32	18	82	1.6	0.0	116	79	110	2.5					424	53	USBR				
4-17 1000		61		895	7.9	43	18	106	0.0	0.0	136	101	145	4.3					530	56	USBR				
5-16 1120		68		726	7.4	44	11	89	1.2	0.0	136	78	117	1.2					446	55	USBR				
6-13 1145		71		290	6.7	16	7.4	30	2.0	0.0	65	29	40	0.6					200	47	USBR				
7-18 1125		77		1011	7.3	48	22	121	3.1	0.0	157	124	159	1.9					632	55	USBR				
8-15 1010		74		807	8.1	39	17	86	1.6	0.0	165	98	100	0.0					434	53	USBR				
9-12 1145		72		755	7.5	49	8.3	84	2.0	0.0	142	68	119	0.6					446	53	USBR				
10-16 1150		67		974	7.7	43	16	110	3.1	0.0	140	87	144	3.1					500	57	USBR				
11-14 1130		61		1297	7.9	60	31	168	2.3	0.0	185	155	242	0.0					820	57	USBR				
12-16 1245		56		1272	8.7	61	32	164	1.6	7.3	179	167	210	5.0					794	56	USBR				

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept of Pub Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

# ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharges in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micramhos at 25°C)	pH*	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957	Not Available																							
1-17 0850		48			399	8.4	26	7.2	45	2.7	1.5	140	28	40	1.2					278	50		USBR	
2-13 1455		54			792	7.9	42	17	91	1.6	0.0	124	80	129	0.6					470	53		USBR	
3-15 0855		57			690	8.1	38	18	72	2.3	0.0	156	63	98	3.1					430	47		USBR	
4-17 1430		59			686	7.7	47	11	76	2.0	0.0	142	72	89	2.5					426	50		USBR	
5-16 1255		69			1255	7.6	47	7.8	61	1.2	0.0	140	67	75	1.2					386	46		USBR	
6-13 1305		75			522	7.3	31	13	56	2.0	0.0	126	55	71	1.8					342	48		USBR	
7-18 1245		78			724	7.3	44	14	74	3.5	0.0	146	68	106	1.9					424	48		USBR	
8-15 0910		73			798	8.0	42	16	78	1.6	0.0	141	67	118	0.6					426	49		USBR	
9-12 1335		72			6166	7.4	322	188	706	11	0.0	101	228	2048	0.6					4590	49		USBR	
10-16 1340		70			784	7.5	39	14	89	3.1	0.0	181	48	113	1.0					420	55		USBR	
11-14 1200		61			919	7.7	46	18	128	2.3	0.0	270	53	136	4.2					558	59		USBR	
12-16																							USBR	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept of Water & Power (LADWP), City of Los Angeles Dept of Public Health (LADPH), Long Beach Dept of Public Health (LBDPH), as indicated.

f Field pH except when noted with \*

TABLE B-111

ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH*	Mineral constituents in parts per million										Total dissolved solids in ppm <sup>c</sup>	Percent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by <sup>e</sup>
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957	Not listed																				
1-28 1020	44			333	8.0	22	10	24	0.0	0.0	68	39	37	1.9				208	35		USBR
2-27 1140	52			124	7.2	12	5.5	0.5	0.0	0.0	40	19	0.0	1.2				132	1.9		USBR
3-26 1430	57			231	7.2	16	7.4	17	1.2	0.0	59	35	20	0.0				150	33		USBR
5-1 1105	63			131	7.2	14	2.9	6.2	1.2	0.0	51	9.1	8.2	0.6				90	22		USBR
5-27 1130	68			120	6.8	7.8	4.5	4.6	0.0	0.0	46	11	4.6	1.8				92	21		USBR
6-24 1500	74			162	6.8	13	5.2	10	0.0	0.0	56	13	10	0.0				126	30		USBR
7-30 1530	70			185	7.3	12	7.3	12	1.6	0.0	71	9.6	12	0.0				132	31		USBR
8-26 1500	70			227	7.2	12	8.8	18	1.6	0.0	79	11	18	0.0				126	36		USBR
10-1 1430	70			199	7.3	14	8.2	15	2.0	0.0	78	20	15	0.0				150	31		USBR
10-29 1400	64			240	7.7	16	8.3	20	1.6	0.0	82	20	25	0.0				180	36		USBR
11-25 1445	56			213	7.3	15	7.0	16	2.2	0.0	71	24	23	0.6				160	33		USBR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm <sup>b</sup>	Percent sodium	Hardness as CaCO <sub>3</sub> Total N/C ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	%Sat			equivalents per million																		
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents
1957										SAN JOAQUIN RIVER NEAR VERNALIS (STA. 27)															
	1900	49	11.3	98	645	7.5	32 1.60	15 1.21	74 3.22	2.4 0.06	0 0.00	120 1.97	38 0.79	112 3.16	2.9 0.05	0.1 0.01	0.24 24	Fe 0.00	360 <sup>b</sup>	52	140	42	3	USGS	
	1440	59	9.6	95	771	7.5	40 2.00	18 1.48	88 3.83	3.0 0.08	0 0.00	138 2.26	69 1.44	129 3.64	1.9 0.03	0.2 0.01	0.29 23	Fe 0.03	440 <sup>b</sup>	52	174	61	20	USGS	
	4500	55	10.8	101	275	7.5	16 0.80	6.8 0.56	28 1.22	1.6 0.04	0 0.00	58 0.95	22 0.46	40 1.13	1.8 0.03	0.2 0.01	0.00 14	Fe 0.03	159 <sup>b</sup>	47	68	20	20	USGS	
	616	67	13.0	140	991	8.5	55 2.74	24 1.98	107 4.65	4.4 0.11	0 0.00	152 2.49		199 5.61		0.24		Fe 0.03 Al 0.11 Pb 0.02 Zn 0.07 PO <sub>4</sub> 0.35	351 <sup>b</sup>	49	236	111	9	USGS	
	1510	72	13.1	149	621	8.3	34 1.70	13 1.07	70 3.04	3.5 0.09	0 0.00	119 1.95	41 0.85	108 3.05	1.7 0.03	0.4 0.02	0.12 20			42	57	6	45	USGS	
	3890	70	7.9	88	224	7.3	15 0.75	4.7 0.39	20 0.87	1.7 0.04	0 0.00	62 1.02		28 0.79		0.02			51	197	70	10	USGS		
	870	81	13.4	166	845	8.4			96 4.18		0 0.00	155 2.54		154 4.34		0.23			53	190	60	20	USGS		
	791	78	11.1	134	851	8.1			99 4.31		0 0.00	159 2.61		155 4.37		0.22		PO <sub>4</sub> 0.50 Fe 0.02 Al 0.10 Zn 0.01	435 <sup>b</sup>	50	173	42	9	USGS	
	1350	71	8.3	93	765	8.1	41 2.05	17 1.40	82 3.57	4.6 0.12	0 0.00	160 2.62	49 1.02	126 3.55	2.9 0.05	0.0 0.00	0.16 23			50	100	18	4	Median 96	USGS
2360	69	8.7	96	455	7.5			46 2.00		0 0.00	100 1.64		71 2.00		0.30			52	89	24	5	Max. 7,000	USGS		
2420	55	9.6	90	404	7.5			44 1.91		0 0.00	79 1.29		64 1.80		0.00			53	102	27	4	Min. 2.3	USGS		
2450	53	9.5	87	479	7.5			52 2.26		0 0.00	92 1.51		77 2.17		0.00										USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.



TABLE B-11  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH*	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Caliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (B)	Silica (SiO <sub>2</sub> )				Other constituents	Total ppm	N.C. ppm
1-57	Not Rated																									
1-17 1130		50			1060	8.5	45	27	133	3.5	4.8	185	144	168	3.7					700	56	USBR				
2-13 1145		57			946	8.1	58	17	122	1.6	0.0	194	136	121	3.1					574	55	USBR				
3-15 1121		58			713	8.0	34	16	84	1.6	0.0	120	80	111	2.5					446	55	USBR				
4-17 0900		61			682	7.8	45	22	76	0.0	0.0	148	83	115	1.9					536	45	USBR				
5-16 1023		68			885	7.5	46	18	106	0.0	0.0	150	94	134	1.2					542	55	USBR				
6-13 1050		71			281	6.7	16	7.6	28	2.0	0.0	64	27	40	0.6					192	45	USBR				
7-18 1015		75			994	7.4	48	25	113	3.1	0.0	174	113	154	2.5					576	52	USBR				
8-15 1140		76			933	8.0	40	24	95	1.6	0.0	163	61	125	0.6					516	51	USBR				
9-12 1115		72			839	7.7	43	20	96	2.0	0.0	156	79	132	0.6					530	52	USBR				
10-16 1130		67			1228	7.3	46	36	136	3.1	0.0	175	158	168	5.6					664	52	USBR				
11-14 1010		60			1315	7.7	60	32	158	2.3	0.0	200	154	217	7.4					796	54	USBR				
12-16 1145		58			1281	8.7	57	29	160	1.6	10	193	151	219	4.3					810	57	USBR				

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub. Health (LBOPH) or United States Bureau of Reclamation (USBR) or State Department of Water Resources (OWR), as indicated.

f Field pH except when noted with \*

## CENTRAL VALLEY REGION

Iron (Fe) aluminum (Al) arsenic (As) copper (Cu) lead (Pb) manganese (Mn) zinc (Zn) and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

c Gravimetric determination.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of

Field pH except when noted with #

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge Temp in cfs	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per-cent Sulfate in ppm	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by
		ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Barium (Ba)	Silica (SiO <sub>2</sub> )					
1957																						
1/10 1350	3.5 37	13.5	100	132	7.3	9.6 0.48	5.4 0.44	10 0.44	0.1 0.00	0 0.00	60 0.98		4.0 0.11			0.03			46	0	0.3	USGS
2/13 1500	5.0 53	11.2	102	160	7.7	11 0.55	7.2 0.59	12 0.52	0.2 0.01	0 0.00	70 1.15		6.5 0.18			0.03			57	0	1	USGS
3/12 1130	6.2 52	10.9	99	108	7.5	9.8 0.49	4.9 0.40	5.7 0.25	0.2 0.01	0 0.00	58 0.95		3.0 0.08			0.02			44	0	5	USGS
4/8 1325	7.0 64	9.4	98	149	7.7	12 0.60	5.6 0.46	9.6 0.42	0.2 0.01	0 0.00	76 1.25		4.5 0.13			0.06			53	0	1	USGS
5/6 1535	5.6 74	8.3	96	154	7.9	13 0.65	5.7 0.47	11 0.48	0.4 0.01	0 0.00	80 1.31	7.3 0.15	5.3 0.15	0.1 0.00	0.1 0.01	0.01		Al 0.04 PO <sub>4</sub> 0.00 Fe 0.03	56	0	0.6	USGS
6/10 1430	3.7 79	7.9	96	155	7.9	14 0.70	5.6 0.46	11 0.48	0.3 0.01	0 0.00	84 1.38		4.2 0.12			0.11			58	0	4.2	USGS
7/8 1200	0 80	8.0	98	286	7.7			23 1.00		0 0.00	125 2.05		16 0.45			0.14			100	0	2	USGS
Aug.	dry																					
Sept.	dry																					
10/22 1500	1.2 64	9.3	97	246	7.5			21 0.91		0 0.00	80 1.31		13 0.37			0.03			74	8	1	USGS
11/12 1250	1.0 54	10.5	97	216	7.5			18 0.78		0 0.00	78 1.28		11 0.31			0.03			68	4	0.6	USGS
12/20 1100	4.6 50	11.0	97	103	7.3			8.0 0.35		0 0.00	50 0.82		4.5 0.13			0.00			43	2	1	USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH).

f Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated

g Field pH except when noted with a

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> Total N.C. ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by e
			ppm	% Sat			equivalents per million															
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)						
1957																						
1/10 1640	310	48	12.4	107	198	7.5	20 1.00	7.1 0.58	10 0.44	1.6 0.04	0 0.00	0 1.06			5.2 0.15		0.00				21 79 0 2	USGS
2/21 1355	180	59	13.0	128	298	8.1	28 1.40	12 0.96	18 0.78	2.3 0.06	0 0.00	0 1.57			10 0.28		0.04				24 118 0 3	USGS
3/21 1635	714	57	10.5	101	127	7.5	11 0.55	6.4 0.53	5.1 0.22	1.2 0.03	0 0.00	0 0.65			3.0 0.08		0.09				17 54 1 35	USGS
4/11 1640	93	67	9.3	100	269	7.5	25 1.25	11 0.93	16 0.70	2.4 0.06	0 0.00	0 1.46			9.0 0.25		0.06				24 109 0 5	USGS
5/17 0750	433	65	7.9	84	110	7.3	12 0.60	2.9 0.24	5.7 0.25	1.2 0.03	0 0.00	0 0.59	4.4 0.09		1.6 0.05	1.2 0.01	0.00	17 0.00	Al 0.11 Cu 0.01 Pb 0.20 Fe 0.10 Cr 0.01		22 42 0 15	USGS
6/13 1035	1010	68	7.7	84	88.2	7.1	10 0.50	2.1 0.17	3.3 0.14	1.0 0.03	0 0.00	0 0.45			0.3 0.01		0.00				17 34 0 25	USGS
7/11 1610	99	81	10.6	132	250	8.1			15 0.65		0 0.00	0 1.34			8.5 0.24		0.08				25 100 0 2	USGS
8/8 1530	85	78	9.0	108	278	7.7			17 0.74		0 0.00	0 1.50			9.6 0.27		0.00				26 106 0 5	USGS
9/27 1000	225	70	6.7	74	252	7.7	24 1.20	8.4 0.69	15 0.65	2.8 0.07	0 0.00	0 1.33	11 0.23		7.2 0.20	1.3 0.02	0.01 0.00	25 0.00	Pb 0.25 Al 0.03 Zn 0.01		25 94 0 8	USGS
10/17 1610	297	70	9.6	106	248	7.7			14 0.61		0 0.00	0 1.31			8.0 0.23		0.07				23 100 0 5	USGS
11/22 1125	195	54	10.4	96	251	7.7			15 0.65		0 0.00	0 1.39			7.0 0.20		0.00				24 103 0 4	USGS
12/19 1230	210	53	10.3	94	250	7.5			14 0.61		0 0.00	0 1.27			8.7 0.25		0.00				24 95 0 12	USGS

o Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{ppm}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.



TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (m at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm <sup>b</sup>	Percent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Analyzed by <sup>e</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
			ppm	% Sat			equivalents per million																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
							Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)						Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
1957						<sup>f</sup>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.  
b Determined by addition of analyzed constituents.  
c Gravimetric determination.  
d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.  
e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District of Water & Power (LADWP), City of Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LSDPH) or State Department of Water Resources (DWR), as indicated.  
f Field pH except when noted with \*

## CENTRAL VALLEY REGION

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.00}$  except as shown.

Determined by addition of analyzed constituents.

### Geometric determination

Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Public Works (LAPWD), and State Department of Water Resources (SDWR).

Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

Field pH except when noted with a

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by	
						equivalents												Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)								
STONY CREEK NEAR HAMILTON CITY (STA. 13)																							
1957																							
Jan.	dry																						
Feb.	dry																						
3/12	488	58	10.5	102	260	7.9	28	10	12	1.0	0	120		15			0.13						
1525							1.40	0.82	0.52	0.03	0.00	1.97		0.42									
4/9	21	59	9.3	92	313	7.7	33	13	14	0.7	0	142		19			0.09						
1010							1.65	1.10	0.61	0.02	0.00	2.33		0.54									
5/7	32	71	9.4	106	313	8.1	34	12	14	0.7	0	152	15	18	0.2	0.0	0.09	10		Fe 0.02 Al 0.02			
1245							1.70	0.96	0.61	0.02	0.00	2.49	0.31	0.51	0.00	0.00				Cu 0.04 Zn 0.01			
6/11	18	77	8.7	104	310	8.1	34	12	14	0.7	0	155		17			0.20			PO <sub>4</sub> 0.05			
1230							1.70	0.96	0.61	0.02	0.00	2.54		0.48									
July	dry																						
Aug.	dry																						
Sept.	dry																						
10/23	40	58	10.0	97	396	8.1			17		0	182		27			0.11						
1120									0.74		0.00	2.98		0.76									
Nov.	dry																						
12/19	1130	47	11.3	96	330	7.9			18		0	138		28			0.17						
1330									0.78		0.00	2.23		0.79									

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBDPH) or State Department of Water Resources (DWRI), as indicated.

f Field pH except when noted with \*



## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent solum	Hardness as CaCO <sub>3</sub>		Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by		
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlor- ide (Cl)	Ni- trate (NO <sub>3</sub> )	Fluor- ide (F)			Baron (B)	Silica (SiO <sub>2</sub> )				Other constituents	
1957																									
1/9 0800	31	43	12.4	100	426	7.9	58 2.89	9.6 0.79	22 0.96	2.9 0.07	0 0.00	261 4.28					12 0.34	0.17		20	184	0	0.6	USGS	
2/19 1130	82	56	10.9	103	276	8.1	38 1.90	5.1 0.42	15 0.65	2.1 0.05	0 0.00	170 2.79					7.5 0.21	0.10		22	116	0	1	USGS	
3/19 1650	95	57	10.6	102	258	8.3	35 1.75	5.5 0.45	14 0.61	2.2 0.06	4 0.13	145 2.38					7.3 0.21	0.04		21	110	0	1	USGS	
4/9 1145	80	60	9.7	97	250	8.3	35 1.75	4.3 0.35	12 0.52	2.1 0.05	0 0.00	149 2.44					6.0 0.17	0.19		19	105	0	0	USGS	
5/14 1000	119	56	10.1	96	207	7.7	29 1.45	2.6 0.21	11 0.48	1.8 0.05	0 0.00	121 1.98	1.9 0.04				4.5 0.13	0.2 0.01	24	22	83	0	2	USGS	
6/11 1055	167	64	9.6	100	157	7.7	22 1.10	1.6 0.13	7.2 0.31	1.6 0.04	0 0.00	90 1.48					2.3 0.06	0.00		20	62	0	15	USGS	
7/9 0740	17	73	8.3	95	314	8.1			16 0.70		0 0.00	193 3.16					7.5 0.21	0.13		20	141	0	0.9	USGS	
8/6 1150	34	76	9.1	107	373	8.1			20 0.87		13 0.43	212 3.47					9.8 0.28	0.15	Total Alk. 238	21	167	0	0.6	USGS	
9/25 1120	3.4	73	9.9	113	400	8.1	53 2.64	8.3 0.68	23 1.00	3.8 0.10	5 0.17	224 3.67	2.9 0.06				13 0.37	0.0 0.00	33	23	166	0	2	USGS	
10/15 1335	51	66	8.9	95	362	7.9			21 0.91		0 0.00	204 3.34					10 0.28	0.16	Total Alk. 234 Fe 0.01 Al 0.08 PO <sub>4</sub> 0.05 a	23	150	0	7	USGS	
11/20 1110	39	55	10.3	97	403	8.1			21 0.91		7 0.23	227 3.72					12 0.34	0.17	Total Alk. 241	21	170	0	0.6	USGS	
12/17 1315	320	52	10.4	94	186	7.7			11 0.48		0 0.00	100 1.64					6.8 0.19	0.01		24	76	0	80	USGS	

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.0}$  except as shown.

Determined by addition of analyzed constituents.

c Gravimetric determination.

Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH),

Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*



TABLE B-14

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent solum	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )			
1957																							
1/10 0900	1224	48	10.7	92	31.6	6.9	3.4 0.17	0.9 0.07	1.2 0.05	0.4 0.01	0 0.00	0.16 0.26			0.3 0.01		0.00	17	12	0	1	USGS	
2/20 1400	920	46	11.7	98	37.1	6.7	3.6 0.18	1.1 0.09	1.5 0.07	0.5 0.01	0 0.00	0.16 0.26			0.5 0.01		0.00	20	14	1	1	USGS	
3/21 0950	3160	47	12.2	104	45.0	7.0	4.4 0.22	2.4 0.20	1.6 0.07	0.7 0.02	0 0.00	0.22 0.36			1.0 0.03		0.08	14	21	3	5	USGS	
4/11 0845	2530	49	9.5	83	55.9	7.1	4.8 0.24	2.7 0.22	2.0 0.09	0.6 0.02	0 0.00	0.27 0.44			0.5 0.01		0.06	16	23	1	3	USGS	
5/16 0850	2170	45	9.5	79	38.9	6.9	4.4 0.22	0.4 0.03	2.3 0.10	0.7 0.02	0 0.00	0.18 0.30	2.3 0.05		0.0 0.00	0.3 0.00	0.2 0.01	42	27	12	0	3	USGS
6/12 1135	3160	58	10.8	105	31.2	6.9	3.8 0.19	0.4 0.03	1.4 0.06	0.5 0.01	0 0.00	0.16 0.26			0.0 0.00	0.00 0.01	0.00	21	11	0	1	USGS	
7/11 0915	3160	62	10.3	105	22.8	6.8			1.2 0.05		0 0.00	0.10 0.16			1.0 0.03		0.08	19	11	3	0.8	USGS	
8/8 0750	2260	62	9.0	92	19.0	7.3			1.6 0.07		0 0.00	0.9 0.15			1.2 0.03		0.00	37	6	0	2	USGS	
9/26 1220	1460	63	6.8	70	23.4	6.7	0.8 0.04	1.1 0.09	1.3 0.06	0.6 0.02	0 0.00	0.12 0.20	0.0 0.00		0.0 0.00	0.0 0.00	0.00	15	29	6	0	2	USGS
10/17 1030	980	64	7.5	78	33.1	6.7			1.5 0.07		0 0.00	0.16 0.26			1.2 0.03		0.17	25	11	0	8	Median 23	USGS
11/21 1345	1250	58	8.1	79	26.8	6.7			1.3 0.06		0 0.00	0.13 0.21			1.2 0.03		0.00	18	14	3	2	Max. 620	USGS
12/18 1400	1040	52	9.0	81	28.8	6.7			1.5 0.07		0 0.00	0.14 0.23			1.8 0.05		0.00	26	10	0	0.8	Min. 0.045	USGS

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

<sup>a</sup> Determined by addition of analyzed constituents.

Gravimetric determination.

Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS). Pacific Chemical Consultant (PCC), Metropo-

City of Los Angeles Dept. of Public Health (LADPH), City of Los Angeles Dept. of Water & Power (LAWP), Metropolitan Water District (MWD), Pacific Chemical Consortium (PCC), quantity of water produced (GPD), State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

CENTRAL VALLEY REGION

Field pH except when noted with a

TABLE B-14  
ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhm-cm at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliformity MPN/ml	Analyzed by				
			ppm	%Sat			equivalents																				
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents			
1957							TUDUMNE RIVER AT TUDUMNE CITY (STA. 31)																				
1/10 1345	905	52	10.2	92	342	7.1	25 1.25	3.3 0.27	34 1.48	2.4 0.06	0 0.00	67 1.10		70 1.97			0.00				48	76	21	0.9			USGS
2/21 0805	550	57	7.9	76	507	7.1	30 1.50	2.0 0.74	53 2.31	3.5 0.09	0 0.00	90 1.48		108 3.05			0.06				50	112	38	2			USGS
3/21 1340	1830	53	11.1	102	114	7.1	7.6 0.38	3.2 0.26	9.4 0.41	1.2 0.03	0 0.00	29 0.48		20 0.56			0.09				38	32	8	7			USGS
4/11 1345	490	55	7.5	70	787	7.5	47 2.35	14 1.17	83 3.61	6.8 0.17	0 0.00	137 2.25		166 4.68			0.12				49	176	64	3			USGS
5/16 1335	440	74	8.7	101	788	7.7	47 2.35	13 1.04	91 3.96	6.4 0.16	0 0.00	134 2.20	8.6 0.18	170 4.79	3.6 0.06	0.4 0.02	0.10	27	Al 0.14 Cu 0.01 PO <sub>4</sub> 0.80 Fe 0.02 Pb 0.01 Zn 0.05	443	53	170	60	2			USGS
6/13 0715	885	68	6.1	67	369	7.1	24 1.20	7.7 0.63	35 1.52	3.0 0.08	0 0.00	67 1.10		74 2.09			0.00				44	92	37	3			USGS
7/11 1355	325	82	11.9	149	819	8.3			95 4.13		0 0.00	146 2.39		178 5.02			0.12				53	181	61	3			USGS
8/8 1245	320	76	7.7	91	844	7.7			96 4.18		0 0.00	146 2.39		183 5.16			0.10				54	180	60	8			USGS
9/27 0645	360	69	5.1	56	753	7.4	42 2.10	13 1.08	81 3.52	6.4 0.16	0 0.00	141 2.31	6.7 0.14	153 4.31	0.2 0.00	0.2 0.01	0.05	41	PO <sub>4</sub> 0.50 Cu 0.01	413	51	159	43	5			USGS
10/17 1410	1205	68	6.3	69	263	6.9			25 1.09		0 0.00	54 0.89		54 1.52			0.12				49	56	12	6	Median 560		USGS
11/22 0820	1530	56	8.9	84	184	7.1			21 0.91		0 0.00	38 0.62		38 1.07			0.03				51	44	13	2	Max. 7,000		USGS
12/19 1000	1395	53	9.0	82	226	7.0			21 0.91		0 0.00	46 0.75		44 1.24			0.00				47	52	14	1	Min. 6.2		USGS

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.



TABLE B-14

## ANALYSES OF SURFACE WATER

## CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent total solid in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Caliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents
1957	Mean Daily																								
1/10 1120	650	38	13.0	97	118	7.3	14 0.70	4.1 0.34	3.1 0.13	0.5 0.01	0 0.00	60 0.98		1.5 0.04			0.00		11	52	3	15	USGS		
2/13 1240	782	47	12.4	106	111	7.5	13 0.65	4.3 0.35	3.6 0.16	0.5 0.01	0 0.00	58 0.95		2.3 0.06			0.00		14	50	2	7	USGS		
3/12 0915	6570	49	11.7	102	55.8	7.1	5.2 0.26	3.6 0.30	1.5 0.07	0.7 0.02	0 0.00	29 0.48		0.5 0.01			0.02		11	28	4	20	USGS		
4/8 1105	2510	54	10.9	101	71.4	7.3	8.8 0.44	2.6 0.21	2.0 0.09	0.4 0.01	0 0.00	41 0.67		0.3 0.01			0.00		12	32	0	5	USGS		
5/6 1245	3450	62	9.8	100	71.9	7.3	8.7 0.43	1.9 0.16	2.4 0.10	0.4 0.01	0 0.00	37 0.61	2.9 0.06	1.0 0.03	0.0 0.00	0.1 0.01	14		49	30	0	3	USGS		
6/10 1130	3470	64	9.6	100	52.8	7.3	7.4 0.37	1.3 0.11	1.7 0.07	1.0 0.03	0 0.00	25 0.41		2.2 0.06			0.06		12	24	4	20	USGS		
7/8 0945	310	69	8.8	97	87	7.3		2.4 0.10			0 0.00	41 0.67		0.8 0.02			0.11		11	39	5	8	USGS		
8/12 1030	258	72	7.4	84	112	7.4		3.2 0.14			0 0.00	57 0.93		1.0 0.03			0.00		12	53	6	2	USGS		
9/16 1045	261	69	8.0	88	126	7.5	14 0.70	5.1 0.42	3.8 0.17	1.3 0.03	0 0.00	64 1.05	11 0.23	1.5 0.04	0.1 0.00	0.1 0.01	21		90	56	4	0.6	USGS		
10/22 1140	420	62	9.5	97	130	7.5		3.8 0.17			0 0.00	68 1.11		1.5 0.04			0.03		12	59	3	2	USGS		
11/12 1030	480	56	10.0	95	121	7.3		3.5 0.15			0 0.00	62 1.02		2.5 0.07			0.00		12	55	4	4	USGS		
12/20 1350	2100	49	11.3	98	103	7.3		3.3 0.14			0 0.00	52 0.85		2.5 0.07			0.00		13	46	3	30	USGS		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*



TABLE B-14

ANALYSES OF SURFACE WATER  
CENTRAL VALLEY REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhms at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Solids in ppm	Hardness as CaCO <sub>3</sub> in ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by	
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents
1957																								
1/10 1245	615	39	13.1	99	115	7.3	14 0.70	3.6 0.30	3.1 0.13	0.6 0.02	0 0.00	62 1.02		1.2 0.03		0.00		11	50	0	1	USGS		
2/13 1400	706	45	12.8	106	107	7.3	13 0.65	3.4 0.28	3.3 0.14	0.5 0.01	0 0.00	57 0.93		2.8 0.08		0.00		13	46	0	6	USGS		
3/12 1025	5502	48	12.0	103	54.7	7.1	5.2 0.26	3.4 0.28	1.4 0.06	0.7 0.02	0 0.00	28 0.46		0.5 0.01		0.02		10	27	4	20	USGS		
4/8 1225	2462	55	11.1	104	69.3	7.3	8.8 0.44	2.8 0.23	2.1 0.09	0.4 0.01	0 0.00	40 0.66		0.4 0.01		0.00		12	34	1	4	USGS		
5/6 1350	4262	58	10.0	98	67.5	7.3	8.7 0.43	1.7 0.14	1.9 0.08	0.4 0.01	0 0.00	35 0.57	2.3 0.05	1.5 0.04	0.0 0.00	0.1 0.01	0.00	47	28	0	4	USGS		
6/10 1245	1319	64	9.6	100	49.3	7.3	7.7 0.38	0.7 0.06	1.9 0.08	0.4 0.01	0 0.00	25 0.41		0.9 0.03		0.11		15	22	2	3	USGS		
7/8 1100	793	65	9.4	99	67.1	7.3			2.2 0.10		0 0.00	34 0.56		0.7 0.02		0.09		14	31	3	0.9	USGS		
8/12 1150	746	76	8.4	99	108	7.5			3.2 0.14		0 0.00	59 0.97		1.5 0.04		0.00		11	57	9	0.6	USGS		
9/16 1210	503	77	8.7	104	122	7.7	15 0.75	3.3 0.27	3.8 0.17	1.1 0.03	0 0.00	65 1.07	4.8 0.10	2.6 0.07	0.2 0.00	0.0 0.00	19	82	0	1	USGS			
10/22 1300	461	60	9.9	99	121	7.5		3.5 0.15			0 0.00	64 1.05		2.0 0.06		0.00		13	52	0	1	USGS		
11/12 1150	511	54	10.6	98	107	7.3		3.4 0.15			0 0.00	54 0.89		1.5 0.04		0.00		13	49	5	4	USGS		
12/20 1240	2015	47	11.6	98	103	7.3		3.7 0.16			0 0.00	52 0.85		2.5 0.07		0.17		15	47	44	20	USGS		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.

TABLE B-15

## ANALYSES OF SURFACE WATER

## LAHONTAN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm <sup>b</sup>	Per cent sodium in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fate (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)	Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents			
1957																					
Jan	Snowbound																				
Feb	Snowbound																				
Mar	Snowbound																				
4/12		45	9.7	81	21.8	7.3	8.0 0.40	2.4 0.20	5.2 0.23	1.4 0.04	0 0.00	46 0.75	1.5 0.04			0.05			0	1	USGS
0810																					
5/9		51	9.1	81	88.0	7.4	2.2 0.43	1.9 0.16	5.8 0.25	1.5 0.04	0 0.00	52 0.85	2.2 0.06	0.0 0.00	0.1 0.01	0.05	11	Fe 0.01; Al 0.02; Cu 0.02; Zn 0.04; Pb 0.000 <sup>a</sup>	0	0.4	USGS
6/14		54	8.3	77	67.7	7.3	7.6 0.38	0.6 0.05	4.1 0.18	1.2 0.03	0 0.00	36 0.59	0.4 0.01			0.00			0	2	USGS
0630																					
7/12		64	7.5	78	91.6	7.7		6.4 0.28			0 0.00	51 0.84	3.0 0.08			0.01			0	1	USGS
0800																					
8/16		64	7.4	77	92.4	7.9		6.6 0.29			0 0.00	50 0.82	2.2 0.06			0.00			0	1	USGS
0950																					
9/20		58	7.8	76	97	7.9	10 0.50	1.7 0.14	6.7 0.29	2.1 0.09	0 0.00	51 0.84	2.8 0.08	0.4 0.00	0.0 0.00	0.00	18	Pb 0.00 <sup>a</sup>	0	0.6	USGS
0815																					
10/25		52	8.6	78	94	7.9		5.5 0.24			0 0.00	51 0.84	1.7 0.05			0.00			0	0.6	USGS
1740																					
11/15		43	9.3	75	93.3	7.3		6.5 0.28			0 0.00	52 0.85	2.2 0.06			0.01			0	0.6	USGS
1350																					
Dec	Snowbound																				

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents.

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

<sup>f</sup> Field pH except when noted with <sup>a</sup>.

TABLE B-15  
ANALYSES OF SURFACE WATER  
LAHONTAN REGION

Date and time sampled	Discharge Temp. in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm <sup>b</sup>	Percent calcium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by				
		ppm	% Sat.			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents <sup>a</sup>			
1957																										
Jan	Snowbound																									
Feb	Snowbound																									
Mar	Snowbound																									
4/12 1040	44	9.8	80	86.8	7.6	9.2 0.46	2.7 0.22	5.9 0.26	1.6 0.04	0 0.00	51 0.84		1.5 0.04			0.07					27	34	0	1		USGS
5/9 1415	51	9.4	84	94.0	7.5	9.3 0.46	2.1 0.17	6.0 0.26	1.6 0.04	0 0.00	52 0.85	2.3 0.05	1.8 0.05	0.0 0.00	0.0 0.00	0.03 0.00	13		PO <sub>4</sub> 0.05 Zn 0.02 <sup>a</sup>		28	31	0	0.6		USGS
6/13 1310	52	9.6	87	91.4	7.5	10 0.50	2.2 0.18	5.9 0.26	1.7 0.04	0 0.00	50 0.82		2.0 0.06			0.07					27	34	0	4.5		USGS
7/11 1425	65	8.0	84	92.1	7.8			6.4 0.28		0 0.00	50 0.82		2.8 0.08			0.01					25	43	2	0.6		USGS
8/15 1430	66	7.9	84	94.5	7.9			6.5 0.28		0 0.00	52 0.85		4.0 0.11			0.10					30	32	0	1		USGS
9/19 1530	63	8.0	83	96	7.9	9.1 0.45	2.6 0.21	6.6 0.29	2.0 0.05	0 0.00	56 0.92	0.0 0.00	3.2 0.09	0.5 0.01	0.0 0.00	0.01	14		PO <sub>4</sub> 0.00 Al 0.02 <sup>a</sup>		29	33	0	1		USGS
10/25 1600	54	8.7	81	95	7.5			5.8 0.24		0 0.00	51 0.84		1.6 0.05			0.03					26	35	0	0.6	Median 0.23	USGS
11/15 1100	46	9.4	79	95.2	7.5			6.5 0.28		0 0.00	52 0.85		2.5 0.07			0.00					27	37	0	0.7	Max. 2.3	USGS
Dec	Snowbound																								Min. 0.045	

<sup>a</sup> Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{1000}$  except as shown.

<sup>b</sup> Determined by addition of analyzed constituents.

<sup>c</sup> Gravimetric determination.

<sup>d</sup> Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

<sup>e</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

<sup>f</sup> Field pH except when noted with \*

LAHONTAN REGION

Field pH except when noted with a



TABLE B-15

## ANALYSES OF SURFACE WATER

## LAHONTAN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957																								
7/2 1945	15 est	73	6.0	69	259	7.0	6.1 0.50	29 1.26	2.2 0.06	0 0.00	121 1.99	22 0.46	7 0.20	0.4 0.01	1.2 0.06	0.12 0.01	25		174	69	-5	DWR		
8/7 1230	1 est	76	6.0	69	317	7.4				0 0.00	145 2.38		10 0.28			0.13			48	83	-5	DWR		
9/4 1900	0.5 est	70	6.0	67	437	8.0	8 0.66	52 2.26	3.2 0.08	0 0.00	159 2.60	69 1.43	15 0.42	1.0 0.02	2.0 0.16	0.14 0.01	30	PO <sub>4</sub> 0.12 a	279	111	0	-5	DWR	
10/9 1130	est 2	69	8.0	89	548	8.0				0 0.00	127 2.08		18 0.51			0.18			58	110		-5	Median 18 DWR	
11/5 1600	est 15	46	10.6	89	267	8.2				0 0.00	112 1.84		12 0.34			0.10			51	72	-5	-5	Max. 240 DWR	
12/4 1200	est 10	44	10.0	82	250	7.5				0 0.00	103 1.69		12 0.34			0.06			43	81	-5	-5	Min. 2.3 DWR	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-15  
ANALYSES OF SURFACE WATER  
LAHONTAN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhm/cm at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium in ppm	Hardness as CaCO <sub>3</sub> Total in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents
1957																									
1/9 1410	52	54	8.4	77	484	7.8						0 0.00	172 2.82			31 0.87		0.04		35	148	-5		DWR	
2/8 0945	33	55	9.0	85	481	7.8						0 0.00	182 2.88			32 0.90		0.04		37	150	-5		DWR	
3/5 1245	41	64	7.0	73	466	7.8						0 0.00	172 2.93			30 0.85		0.11		36	156	-5		DWR	
4/9 1530	26	72	7.0	79	492	7.7						0 0.00	185 3.03			35 0.99		0.14		37	159	7		DWR	
5/9 1100	25	66	7.4	79	483	7.7	38 1.90	15 1.23	41 1.78	2.2 0.06	0 0.00	184 3.02	52 1.08	33 0.93	0.2 0.00	0.4 0.02	0.15 0.00	15		36	157	-5		DWR	
6/11 1430	19	81	6.0	74	482	7.9					0 0.00	179 2.93		32 0.90			0.17		36	155	40		DWR		
7/2 2045	.17	68	7.0	76	491	8.0					0 0.00	186 3.05		33 0.93			0.10		37	152	35		DWR		
8/7 1045	15	80	6.7	83	492	8.1					0 0.00	179 2.93		34 0.96			0.08		37	153	-5		DWR		
9/4 2100	15	61	7.6	76	487	7.9	47 2.35	10 0.82	43 1.87	2.3 0.06	0 0.00	189 3.10	48 1.00	35 0.99	1.0 0.02	0.4 0.02	0.12 0.00	25		38	159	4		DWR	
10/9 1030	20	70	7.2	80	473	8.1					0 0.00	162 2.66		34 0.96			0.00		39	142	-5	Median 23	DWR		
11/5 1430	36	54	10.0	92	387	7.9					0 0.00	167 2.74		30 0.85			0.08		40	130	-5	Max. 2400	DWR		
12/4 1100	20	50	9.0	79	412	7.7					0 0.00	174 2.85		32 0.90			0.06		36	145	85	Min. 0.45	DWR		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with °

TABLE B-15

ANALYSES OF SURFACE WATER  
LAHONTAN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm <sup>b</sup>	Percent Sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Conformed MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1957						f																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-15  
ANALYSES OF SURFACE WATER  
LAHONTAN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro mhos at 25°C)	pH	Mineral constituents in equivalents per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> in ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by e	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957																								
Jan	Snowbound																							
Feb	Snowbound																							
Mar	Snowbound																							
4/11 1345	1085	43	10.4	84	70.3	7.3	7.4 0.37	2.1 0.17	3.1 0.13	1.0 0.03	0	39 0.00 0.64					0.08							
5/9 1245	922	48	9.9	85	63.1	7.3	7.6 0.38	1.2 0.10	3.0 0.13	0.7 0.02	0	35 0.00 0.57	0.0	1.0 0.03	0.1 0.02	0.20 0.01	0.08	17	Fe 0.03; Al 0.07; Cu 0.01; Zn 0.02; Pb 0.00 a					
6/13 1120	1055	53	9.2	84	54.7	7.3	6.3 0.31	1.3 0.11	2.4 0.10	0.6 0.02	0	30 0.00 0.49					0.10							
7/11 1250	630	59	8.3	82	80.9	7.7			4.2 0.18			44 0.00 0.72					0.09							
8/15 1315	573	66	7.4	79	74.3	7.8			4.0 0.17			38 0.00 0.62					0.05							
9/19 1345	620	59	8.0	79	95.9	7.7	9.4 0.47	2.1 0.17	6.4 0.28	2.0 0.05	0	49 0.00 0.80	2.9 0.06	3.2 0.09	0.2 0.00	0.07 0.00	19	Pb 0.05 Fe 0.02 Al 0.03 a						
10/25 1420	465	51	9.5	85	97.8	7.7			5.2 0.23		0	52 0.00 0.85	2.0 0.06				0.07							
11/15 0910	503	39	10.9	83	95.9	7.3			5.8 0.25		0	54 0.00 0.89	3.4 0.10				0.04							
Dec	Snowbound																							

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBDPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with °



TABLE B-15

ANALYSES OF SURFACE WATER  
LAHONTAN REGION

Date and time sampled	Discharge Temp in cfs	Dissolved oxygen ppm	Specific conductance (micro-mhos at 25°C)	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents	Total	Calcium	Iron	
<u>1957</u>																				
Jan	Snowbound																			
Feb	Snowbound																			
Mar	Snowbound																			
4/11 1500	214	46	10.0	84	69.8	7.3	7.8	2.1	3.1	0.8	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5/9 1330	240	45	10.1	84	61.6	7.1	7.6	1.1	2.7	0.7	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6/13 1245	280	51	9.2	82	61.2	7.3	7.4	2.1	3.3	0.9	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7/11 1335	261	65	7.2	76	91.1	7.7	6.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8/15 1400	61	69	8.2	90	106	8.2	9.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9/19 1445	387	63	7.4	77	96.0	7.7	9.8	1.7	6.7	2.1	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10/25 1525	304	54	8.7	81	97.0	7.5	5.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11/15 1015	316	42	10.2	81	95.5	7.3	6.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec	Snowbound																			

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-16

## ANALYSES OF SURFACE WATER

## COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium in ppm	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957 1/8 1250	897	57	9.0	87	7.9					0 0.00	217 3.56		660 18.61						845	360	DWR
2/8 1015	713	54	8.8	81	8.0					0 0.00	212 3.47		715 20.16						886	350	DWR
3/5 1100	898	66	8.5	91	7.8					0 0.00	217 3.56		685 19.32						865	300	DWR
4/9 1100	1294	66	6.6	71	7.9					0 0.00	212 3.47		560 15.79						803	700	DWR
5/7 1145	997	76	7.0	83	8.0	177 8.83	90 7.40	420 18.27	12.5 0.32	0 0.00	214 3.50	683 14.23	583 16.44	13.1 0.21	0.4 0.02	0.48 15			812	500	DWR
6/11 1145	851	75	6.4	75	8.0					0 0.00	224 3.67		618 17.43						834	500	DWR
7/2 1100	846	86	6.0	79	7.1					0 0.00	193 3.16		650 18.33						818	80	DWR
8/13 1050	892	84	6.6	86	8.1					0 0.00	199 3.26		660 18.61						845	250	DWR
9/4 1115	825	84	7.0	91	7.9	172 8.58	92 8.14	470 20.45	11.6 0.30	0 0.00	196 3.21	735 15.30	665 18.75	16.0 0.27	0.6 0.03	0.53 10			836	280	DWR
10/8 1045	1183	68	8.4	92	8.2					0 0.00	206 3.38		570 16.05						757	400	DWR
11/5 1115	584	64	9.0	94	8.1					0 0.00	229 3.75		905 25.52						1018	250	DWR
12/3 1110	711	48	10.2	88	8.2					0 0.00	229 3.75		805 22.70						952	380	DWR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBDPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-16

[illegible]

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.00}$  except as shown.

Determined by addition of analyzed constituents

c Gravimetric determination.

Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropo-

Long Beach Dept of Pub Health (U  
Field pH except when noted with \*

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

Gravimetric determination.

a Mineral analyses made by USGS, Quality of Water Branch (USGS). Pacific Chemical Consultant (PCC). Matropo

Field pH except when noted with a



TABLE B-16  
ANALYSES OF SURFACE WATER  
COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by a																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1957												COLORADO RIVER	NEAR BLYTHE				(Sta 56d)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-16

## ANALYSES OF SURFACE WATER

## COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in equivalents per million										Total Dissolved solids in ppm	Per-cent sodium	Hardness as CaCO <sub>3</sub> ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			ppm	%Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (B)	Silica (SiO <sub>2</sub> )				Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

# COLORADO RIVER BASIN REGION

0.0 except as shown.

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu),  
Determined by addition of analyzed constituents.

c Gravimetric determination.

1 Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

A Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Contaminants (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBOPH) or State Department of Water Resources (DWR), as indicated

Field pH except when noted with #

TABLE B-16

## ANALYSES OF SURFACE WATER

## COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million												Total Dis-solved solids in ppm	Per-cent sodium in ppm	Hardness as CaCO <sub>3</sub>		Tur-bidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO <sub>3</sub> )	Bicar-bonate (HCO <sub>3</sub> )	Sul-fate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )			Other constituents	Total in ppm				in ppm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses at Lippincott mammy samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.



TABLE B-16  
ANALYSES OF SURFACE WATER  
COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-16

# ANALYSES OF SURFACE WATER COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a			
						ppm	% Sat	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)			Nitrate (NO <sub>3</sub> )	Fluoride (F)				Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents
1957																									
1/1 1100		51		1295	8.2*	105 5.24	34 2.79	122 5.31	6 0.15	0 0.00	163 2.67	370 7.70	112 3.16	1.5 0.02	-	-	10.3			842	39	402		MWD	
2/19		56		1270	8.4*	104 5.19	24.5 2.84	117 5.09	6 0.15	2 0.07	162 2.66	363 7.55	107 3.02	2.4 0.04	-	-	8.3			825	38	402		MWD	
Mar		Not Sampled																							
4/30		69		1215	8.3*	99 4.94	32.5 2.67	112 4.87	6 0.15	4 0.13	155 2.54	338 7.03	103 2.90	1.7 0.03	-	-	8.8			783	39	381	0.9	MWD	
5/14		70		1195	8.5*	95 4.74	32.5 2.67	112 4.87	6 0.15	5 0.17	144 2.36	338 7.03	104 2.93	2.0 0.03	-	-	9.1			776	39	371	245 0.6	MWD	
6/4		84		1200	8.4*	94 4.69	32 2.63	115 5.00	6 0.15	2 0.07	148 2.43	335 6.97	104 2.93	1.5 0.02	-	-	9.7			773	40	366		MWD	
7/9		84		1190	8.4*	92 4.59	32 2.63	110 4.79	5 0.13	6 0.20	135 2.21	331 6.88	105 2.96	1.4 0.02	-	-	9.6			760	39	361	0.3	MWD	
8/20		82		1150	8.2*	90 4.49	31 2.55	108 4.70	6 0.15	0 0.00	142 2.33	321 6.68	102 2.88	1.2 0.02	0.4	-	8.9			740	40	352	1.2	MWD	
9/17 1055		77		1145	8.4*	89 4.44	31 2.55	107 4.65	5 0.13	4 0.13	127 2.08	320 6.66	101 2.85	1.0 0.02	0.3 0.02	-	8.8			731	40	350	240	MWD	
10/15		75		1145	8.4	89 4.44	31 2.59	107 4.65	5 0.13	5 0.17	133 2.18	320 6.66	101 2.85	1.0 0.02	-	-	7.6			737	39	352	0.3	MWD	
11/12		66		1155	7.9	94 4.69	30 2.47	106 4.61	5 0.13	0 0.00	153 2.51	317 6.59	98 2.76	1.5 0.02	-	-	10			738	39	358		MWD	
12/10		55		1150	8.1	94 4.69	30.5 2.51	105 4.57	5 0.13	0 0.00	157 2.57	318 6.61	98 2.76	1.8 0.03	0.4	-	9.5			741	38	360	0.6	MWD	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{90}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-16  
ANALYSES OF SURFACE WATER  
COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance at 25°C	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent total solids in ppm	Hardness as CaCO <sub>3</sub> in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by							
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents				
1957																													
1/8 0900	169	56	3.5	33	4405	7.8						0 0.00	256 4.20					980 27.64	0.76									DWR	
2/8 0700	104	52	6.8	61	5376	8.0						0 0.00	267 4.38					1265 35.67	1.02									DWR	
3/5 0840	77	63	2.5	26	5681	7.6						0 0.00	269 4.41					1435 40.47	1.16									DWR	
4/9 0715	74	64	2.4	25	5882	7.8						0 0.00	272 4.57					1520 42.86	1.22									DWR	
5/7 0845	96	74	3.0	35	5882	7.8						0 0.00	256 4.20	821 17.11				1505 42.44	1.2 0.02	0.4 0.02	1.24	20							DWR
6/11 0615	70	68	4.4	48	5813	7.4*						0 0.00	256 4.20					1610 45.40	1.38										DWR
7/2 0800	61	86	1.0	13	6410	7.8						5 0.16	211 3.46					1720 48.50	1.28										DWR
8/13 0545	64	82	1.8	23	7462	7.9						0 0.00	221 3.62					2070 58.37	1.46										DWR
9/4 0845	118	83	3.7	47	6536	8.1						0 0.00	248 4.07	814 16.96				1730 48.79	1.18	15									DWR
10/8 0700	84	68	5.6	61	6849	8.0						0 0.00	262 4.29					1750 49.35	1.24										DWR
11/5 0840	122	63	7.0	72	5376	8.1						0 0.00	237 3.88					1530 43.15	1.08										DWR
12/3 0640	80	46	8.6	72	5714	8.3						0 0.00	260 4.26					1640 46.25	1.32										DWR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.00}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-16

ANALYSES OF SURFACE WATER  
COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )				
1957																					
1/8 1150	606	58	7.5	72	4739	7.8				0	246		1050			0.76		59	937	300	DWR
2/8 0930	523	54	7.0	65	5102	7.8				0	249		1165			1.10		62	972	200	DWR
3/5 1230	565	67	7.0	75	4545	7.2				0	244		1050			0.96		61	953	200	DWR
4/9 1010	655	66	5.8	62	4347	7.7				0	246		965			0.82		59	919	350	DWR
5/7 1100	646	75	5.5	65	3921	7.8				0	240		975			0.96		59	923	250	DWR
6/11 1100	567	73	6.0	69	4329	8.0				0	242		900			0.94		57	876	260	DWR
7/2 1016	522	85	5.2	67	4292	7.9				0	240		980			0.90		59	899	180	DWR
8/13 1000	543	84	5.6	73	4484	8.0				0	223		1090			0.76		66	760	200	DWR
9/4 1045	577	85	6.0	77	4115	8.1				0	218		965			0.76		61	879	270	DWR
10/8 1005	635	68	8.0	87	4184	8.0				0	239		960			0.72		58	873	250	DWR
11/5 1030	487	64	8.0	84	4444	8.1				0	242		1175			1.04		61	963	200	DWR
12/3 1015	507	50	8.0	71	4329	7.9				0	246		1115			1.04		62	935	380	DWR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.



TABLE B-16  
ANALYSES OF SURFACE WATER

COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (microhm/cm at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Per- cent sodium	Hardness as CaCO <sub>3</sub> Total in ppm	Tur- bid- ity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO <sub>3</sub> )	Bicar- bonate (HCO <sub>3</sub> )	Sul- fates (SO <sub>4</sub> )	Chlo- ride (Cl)	Ni- trate (NO <sub>3</sub> )	Fluo- ride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
1957									SALTON SEA	AT SALTON SEA	STATE PARK (Sta 68a)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					</

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.

# ANALYSES OF SURFACE WATER

## COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent lead - ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in nptm	Coliform MPN/ml	Analyzed by e																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE E-16

## ANALYSES OF SURFACE WATER

## COLORADO RIVER BASIN REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent Sodium	Hardness as CaCO <sub>3</sub> ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents
1957																									
	Dry																								
1/8 1615																									
2/8 1415	2.6	63	8.2	84	483	8.0																			
3/6 1435	7.1	68	8.0	87	466	7.4																			
4/9 1600	5.6	64	8.0	84	449	7.9																			
5/7 1530	4.6	65	9.5	100	420	7.5																			
6/11 1625	5.3	64	8.0	84	424	8.0																			
7/2 1415	4.8	70	7.7	86	468	7.7																			
8/13 1400	9.0	68	9.8	107	453	7.9																			
9/5 1500	8.5	70	8.0	89	478	8.2																			
10/8 1445	1.2	67	9.6	103	405	8.4																			
11/5 1515	2.8	65	8.0	84	476	7.5																			
12/3 1500	6.1	63	8.0	82	460	7.8																			

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.

# ANALYSES OF SURFACE WATER

## SANTA ANA REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhm/cm at 25°C)	pH	Mineral constituents in parts per million equivalents per million										Total Dissolved Solids in ppm	Percent Sodium in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents
1957																									
1/8 1355	est 2	57	7.8	75	661	7.8		0.00	252 4.25		29 0.82					0.10		231	12	DWR					
2/7 1150	est 3	61	9.5	95	837	8.2		0.00	347 5.69		32 1.10					0.15		288	-5	DWR					
3/6 1700	est 1	66	6.0	64	874	7.6		0.00	299 4.90		42 1.18					0.19		301	-5	DWR					
4/9 0950	est 1	64	10.5	110	1006	8.0		17 0.57	389 6.38		35 0.99					0.11		412	-5	DWR					
5/7 1150	est 1	65	8.0	85	909	8.1	114 5.69	27 2.22	66 2.87	6.5 0.17	397 6.50	150 3.13	37 1.04	4.0 0.07	0.4 0.02	0.14	20	396 70	20	DWR					
6/11 0930	- 1	70	7.0	78	859	8.1		0.00	376 6.16		29 0.82					0.18		344	-5	DWR					
July	dry																								
Aug	dry																								
Sept. 4 1500	dry																								
Oct.	dry																								
11/6 0955	est 1	48	9.8	85	760	8.2	63 3.14	19 1.56	63 2.74	14 0.36	0.00	301 4.94	48 0.99	32 1.10	49 0.78	0.1	0.08	233 0	-5	DWR					
12/3 1010	est 1	53	9.2	85	917	7.9		0.00	341 5.57		57 1.61					0.23		282	60	DWR					

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with e.



TABLE B-17  
ANALYSES OF SURFACE WATER  
SANTA ANA REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by e	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents
1957																								
1/7 1000	dry																							
2/7 1200	Lake	63	--	26320	9.1	8 0.40	24 1.97	6900 300.1	104 2.66	269 8.97	771 12.64	4055 84.47	7350 207.3	28 0.45		6.00				19581	98	117	100	DWR
3/4 1000	Lake	66	9.0	35399	8.4					343 11.43	1145 18.77		10250 289.05			7.10					99	95	-5	DWR
4/8 1145	dry																							
May	dry																							
June	dry																							
July	dry																							
Aug	dry																							
9/3 0800	dry																							
Oct	dry																							
Nov	dry																							
Dec	dry																							

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub. Health (LADPH), Long Beach Dept. of Pub. Health (LBOPH) or State Department of Water Resources (DWR), as indicated.

TABLE B-17

## ANALYSES OF SURFACE WATER

## SANTA ANA REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	% Sat	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent total solids in ppm	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
							equivalents per million															
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)						
1957																						
1/8 1700	est 48	43	11.0	88	235	7.8				0	110		6			0.08		7	DWR			
2/7 1540	est 26.8	46	10.5	88	226	8.3			0	127	2.08		6			0.02		-5	DWR			
3/5 1610	est 39	50	9.4	83	218	8.2			0	112	1.84		5			0.08		-5	DWR			
4/9 1400	est 38	55	10.0	94	241	8.0			0	124	2.03		5			0.00		-5	DWR			
5/7 1500	est 34	52	10.4	94	243	8.2	25	8	16	2.0	0	22	5			0.05	5	153	DWR			
6/11 1300	est 38	58	10.0	97	208	8.1	1.25	0.66	0.70	0.05	0.00	0.46	3			0.04		6	DWR			
7/2 1800	est 25	63	8.0	83	216	8.3					0	110	3			0.01		-5	DWR			
8/6 1210	est 30	61	9.0	93	243	8.1					0	112	5			0.00		-5	DWR			
9/5 0900	est 48	59	8.0	79	247	8.0	27	8	14	1.7	0	26	5			0.00	20	173	DWR			
10/8 1330	est 36	56	10.0	94	262	8.3	1.35	0.66	0.61	0.04	0.00	0.54	8.0			0.00		-5	DWR			
11/5 1745	est 36	46	11.4	96	243	8.1					0	124	5			0.00		-5	DWR			
12/3 1315	est 36	49	11.5	99	264	8.0*					0	124	5			0.00		-5	DWR			

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-17  
ANALYSES OF SURFACE WATER  
SANTA ANA REGION

Date and time sampled	Discharge in cfs	Temp. in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by		
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )
1957																								
1/8 1500	44	57	8.6	83	938	7.1*						0 0.00	256 4.20				92 2.62			✓	35	284	800	DWR
2/7 1330	38	61	8.0	80	1082	7.8						0 0.00	321 5.26				115 3.24			7/6	35	348	7	DWR
3/6 1805	34	68	6.8	74	1098	7.8						0 0.00	326 5.34				117 3.30			790	36	356	45	DWR
4/9 1140	30	71	8.0	90	1112	8.0						0 0.00	336 5.50				118 3.33			814	35	363	25	DWR
5/7 1300	26	66	7.6	81	1089	8.2						0 0.00	336 5.51	104 2.16			113 3.19			804	35	358	-5	DWR
6/11 1040	32	76	7.5	88	1042	7.7						0 0.00	318 5.21				113 3.19			70	36	339	5	DWR
7/2 1625	27	88	6.6	89	1115	8.3						0 0.00	340 5.57				121 3.41			824	33	367	-5	DWR
8/6 0940	21	71	8.0	92	1017	8.3						0 0.00	330 5.41				112 3.16			700	36	348	-5	DWR
9/4 1600	24	77	8.8	104	1089	8.1						0 0.00	328 5.37	96 2.01			124 3.50			303	36	343	74	DWR
10/8 1045	26	68	8.0	87	1031	8.3						23 0.77	285 4.67				121 3.41			657	37	325	-5	DWR
11/6 0805	43	54	10.4	96	1067	8.2						0 0.00	332 5.44				111 3.13			692	37	338	-5	DWR
12/3 1120	32	57	10.5	117	1085	8.1						2 0.30	311 5.10				114 3.21			305	35	357	-5	DWR

\* Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{\text{ppm}}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE 4-1

## ANALYSES OF SURFACE WATER

## SANTA ANA REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen ppm	Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million equivalents per million										Total Dissolved solids in ppm	Percent sodium in ppm	Hardness as CaCO <sub>3</sub> Total N.C. ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents
1957									SANTA ANA RIVER BELOW PRADO DAM															
1/8 1415	91	57	8.6	83	7.6*	79 3.94	19 1.56	58 2.52	10.6 0.27	0 0.00	242 3.96	96 1.99	81 2.28	12.4 0.20	0.6 0.03	0.25	30							
2/7 1220	81	58	10.0	97	8.2	100 4.99	24 1.98	72 3.44	4.2 0.13	0 0.00	321 5.26	106 2.25	96 2.71	11.6 0.19	0.7 0.04	0.22								
3/6 1730	81	68	7.2	79	8.1	99 4.94	27 2.22	82 3.57	6.2 0.16	0 0.00	323 5.29	112 2.34	99 2.79	11.7 0.19	0.5 0.03	0.23			NH <sub>4</sub> : 0.0 0.00					
4/9 1030	62	65	9.0	94	8.2	100 4.99	23 1.89	78 3.39	4.0 0.10	0 0.00	323 5.29	103 2.15	99 2.79	18.6 0.30	0.4 0.02	0.23			NH <sub>4</sub> : 0.72 0.04					
5/7 1220	61	64	8.2	86	8.1	100 4.99	25 2.06	77 3.35	4.3 0.11	0 0.00	325 5.32	107 2.22	97 2.74	8.9 0.14	0.7 0.03	0.25	15							
6/11 1000	62	68	8.0	87	8.3	96 4.79	25 2.06	80 3.48	4.9 0.13	0 0.00	321 5.26	104 2.16	101 2.85	12.8 0.21	0.5 0.03	0.37	20							
7/2 1550	46	81	6.8	85	8.1	101 5.04	25 2.06	74 3.22	4.3 0.11	0 0.00	323 5.29	108 2.25	106 2.99	8.0 0.13	0.4 0.02	0.23	25							
8/6 0830	29	68	8.5	93	8.3	87 4.34	30 2.46	80 3.48	3.8 0.09	0 0.00	317 5.20	101 2.10	103 2.90	17.7 0.29	0.6 0.03	0.23								
9/4 1515	22	77	6.6	81	8.4	100 4.99	23 1.89	84 3.65	4.4 0.11	0 0.00	318 5.21	108 2.24	111 3.13	8.8 0.14	0.6 0.03	0.28	20		PO <sub>4</sub> : 0.47 NH <sub>4</sub> : 0.0 0.00					
10/8 0945	35	62	9.0	92	8.4	88 4.39	28 2.30	80 3.48	4.1 0.11	23 0.78	278 4.55	100 2.08	113 3.19	12 0.20	0.6 0.03	0.28	30		NH <sub>4</sub> : 0.04 0.02					
11/6 0910	62	54	10.4	96	8.0	95 4.74	23 1.89	77 3.35	6.0 0.15	0 0.00	318 5.21	96 1.99	101 2.85	14.5 0.24	0.6 0.03	0.27								
12/3 1045	53	56	9.5	90	8.2	92 4.94	24 1.97	76 3.31	4.5 0.12	0 0.00	320 5.25	99 2.07	101 2.85	13.5 0.22	0.4 0.02	0.17	25							

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBOPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with a



TABLE B-17  
ANALYSES OF SURFACE WATER  
SANTA ANA REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent sodium	Hardness as CaCO <sub>3</sub> Total in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents

1957	35	61	7.6	76	1005	7.4													31	356	15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
------	----	----	-----	----	------	-----	--	--	--	--	--	--	--	--	--	--	--	--	----	-----	----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Public Health (LADPH), Long Beach Dept. of Public Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

SANTA ANA REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million										Total Dissolved solids in ppm	Percent solum	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by a			
			ppm	% Sat		Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	equivalents											
														Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents		
1/5/7						WARM CREEK AT COLTON (Sta 50b)																			
1/11/8000	20	61	1.4	14	803	7.4	43 2.15	12 0.99	75 3.28	13.0 0.33	0 0.00	269 4.41	53 1.11	63 1.78	13.5 0.22	1.4 0.07	0.31 0.20	20	NH <sub>4</sub> 16.4 0.91	454	51	155	160		DWR
2/9/8000	13	60			814	7.1	60 2.99	13 1.07	55 2.39	11.0 0.28	0 0.00	296 4.88	63 1.32	45 1.27	13.0 0.21	1.4 0.07	0.29		NH <sub>4</sub> 20 1.10	456	37	202	5		DWR
3/10/8000	29	59			649	7.3	51 2.54	17 1.40	43 1.87	10.8 0.28	0 0.00	207 3.39	59 1.23	35 0.99	29.0 0.47	0.6 0.03	0.17		NH <sub>4</sub> 2.5 0.14	374	32	193	2000		DWR
4/8/8000	6.9	68	3.0	33	912	7.4	38 1.90	17 1.40	95 4.13	15.4 0.39	0 0.00	279 4.57	71 1.47	76 2.14	47.7 0.77	1.0 0.05	0.41		NH <sub>4</sub> 14.9 0.83	510	56	165	-5		DWR
5/7/8000	2.0	68	2.0	22	953	7.4	42 2.45	13 1.07	105 4.57	15.2 0.39	0 0.00	231 3.79	69 1.43	92 2.59	43.4 0.70	1.0 0.05	0.38	25	NH <sub>4</sub> 8.3 0.46	584	54	176	6		DWR
6/5/8000	7.6	78	1.9	23	839	7.1	48 2.40	13 1.07	86 3.74	12.0 0.33	0 0.00	259 4.24	59 1.22	75 2.12	34.3 0.55	1.0 0.05	0.31	20	NH <sub>4</sub> 12.3 0.68	490	52	171	11		DWR
7/11/8000		80	3.0	37	842	7.3	48 2.40	15 1.23	88 3.83	12.4 0.32	0 0.00	251 4.11	63 1.32	76 2.14	44.0 0.71	1.0 0.05	0.35	20	NH <sub>4</sub> 2.0 0.50	492	51	180	12		DWR
8/9/8030	10.1	80	2.0	25	841	7.0	40 2.00	20 1.64	85 3.70	13.0 0.33	0 0.00	211 3.46	60 1.26	58 1.64	76.9 1.24	1.0 0.05	0.34		NH <sub>4</sub> 2.3 0.13	512	50	182	-5		DWR
9/7/8000	6.95	84			744	7.2	54 2.69	14 1.15	73 3.18	13.8 0.35	0 0.00	188 3.09	65 1.35	59 1.66	73.0 1.18	1.0 0.05	0.38	25	NH <sub>4</sub> 0.25 0.05	471	43	192	37	-5	DWR
10/13/8000		71			756	7.2	52 2.94	14 1.15	65 2.83	14.2 0.36	0 0.00	210 3.45	75 1.56	49 1.38	73.0 1.17	1.0 0.05	0.23	20	PO <sub>4</sub> 28.4 NH <sub>4</sub> 2.5 0.14	478	41	204	150 Median 23,000		DWR
11/4/8000					912	7.2	52 2.59	16 1.32	85 3.70	15 0.38	0 0.00	244 4.00	82 1.71	65 1.83	58.9 0.94	0.8 0.04	0.25		NH <sub>4</sub> 14.2 0.79	512	49	194	140 Max. 130,000		DWR
12/10		70			921	7.4	58 2.89	16 1.32	79 3.44	14.2 0.36	0 0.00	237 3.88	74 1.55	71 2.00	47.0 0.76	1.0 0.05	0.33	20	NH <sub>4</sub> 15 0.85	541	47	212	-5	Min. 230	DWR

Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{0.00}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Colif. Dept of Public Health, Division of Laboratories.

<sup>a</sup> Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of

Long Beach Dept of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with a

TABLE B-17

## ANALYSES OF SURFACE WATER

## SANTA ANA REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro mhos at 25°C)	pH *	Mineral constituents in parts per million												Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )							Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1957																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*



## ANALYSES OF SURFACE WATER

SAN DIEGO REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micro-mhos at 25°C)	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO3 Total in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by
					Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO3)	Bicarbonate (HCO3)	Sulfate (SO4)	Chloride (Cl)	Nitrate (NO3)	Fluoride (F)						
1957										ESCONDIDO CREEK NEAR HARMONY GROVE										
1/7 1300	Ponded	52	4.0	36	1894	7.7				0 0.00	281 4.61		288 8.12			0.44		5	DWR	
2/7 1610	ponded	54	6.0	55	2247	7.6				0 0.00	291 4.77		346 9.76			0.64		-5	DWR	
3/4 1330	Ponded	63	4.5	46	2079	6.8*				0 0.00	264 4.33		316 8.91			0.55		5	DWR	
4/8 1530	Ponded	70	9.0	100	2242	8.1				0 0.00	351 5.75		346 9.76			0.63		-5	DWR	
5/6 1040	Ponded	63	4.0	41	1896	7.2			17 0.44	0 0.00	288 4.72	335 6.98	339 9.56	33.0 0.53	0.8 0.04	0.72	20	35	DWR	
6/10 1545	Ponded	66	3.0	32	1988	7.1				0 0.00	268 4.39		336 15.12			0.69		30	DWR	
7/1 1030	0.05	68	2.2	24	2155	7.3				7 0.23	289 4.74		353 9.95			0.46		23	DWR	
8/12 1400	0.25	70	3.4	38	2024	7.3				0 0.00	285 4.67		333 9.39			0.51		-5	DWR	
9/3 1020	0.33	67	2.0	21	1897	7.3			17 0.44	0 0.00	273 4.48	317 6.60	318 8.97	7.7 0.12	0.5 0.03	0.64	20	30.8	-5	DWR
10/7	.05	61	4.0	40	2012	7.2				0 0.00	271 4.44		330 9.31			0.71		-5	Median 230	DWR
11/4 1130	est. 0.05	57	3.2	31	1218	6.9				0 0.00	159 2.61		172 4.88			0.35		9	Max. 2400	DWR
12/2 1530	est .50	46	4.0	34	2037	7.2				0 0.00	265 4.34		292 8.23			0.52		-5	Min. 6	DWR

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH).

f Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

\* Field pH except when noted with \*



TABLE B-18

## ANALYSES OF SURFACE WATER

SAN DIEGO REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micro-mhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium in ppm	Hardness as CaCO <sub>3</sub> in ppm		Turbidity in ppm	Coliform MPN/ml	Analyzed by	
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Barium (Ba)	Silica (SiO <sub>2</sub> )				Other constituents
1957											FORESTER CREEK	AT MISSION GORGE ROAD	(Sta 65a)											
6/10 1825	est 2	68	5.2	57	1718	7.2	88 4.39	40 3.29	224 9.74	19.2 0.49	0 0.00	174 2.85	269 5.60	330 9.31	28 0.45	0.7 0.03	1.05				400	DWR		
7/1 1300	0.5 est	88	8.7	117	2342	8.1					0 0.00	223 3.65		440 12.41			0.50				50	DWR		
8/12 1710	0.5 est	79	1.4	17	2293	7.4					0 0.00	223 3.65		448 12.63			0.68				25	DWR		
9/3 1400	0.5	84	5.7	73	2088	7.5	100 4.99	47 3.86	270 11.75	17.1 0.44	0 0.00	239 3.91	337 7.03	365 10.29	23.4 0.38	0.6 0.03	0.24 0.07	20	PO <sub>4</sub>	2.20	5	DWR		
10/7 1815	0.5 est	68	4.0	44	2257	7.3					0 0.00	298 4.88		375 10.58			0.7				5 Median 5600	DWR		
11/4 1430	est 5	63	9.0	92	1898	7.3					0 0.00	237 3.88		326 9.19			0.70				175 Max. 240,000	DWR		
12/2 1820	est .50	61	5.0	50	1934	7.3					0 0.00	151 2.47		312 8.80			0.64				5 Min. 500	DWR		

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*

TABLE B-18

## ANALYSES OF SURFACE WATER

## SAN DIEGO REGION

Date and time sampled	Discharge in cfs	Temp in of	Dissolved oxygen		Specific conductance (at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent anion sum	Hardness as CaCO <sub>3</sub> Total ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)							Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents

1957										SAN DIEGO RIVER AT OLD MISSION DAM									
1/7 1700	Ponded	56	7.0	66	3413	7.6		0	276	844						0.27		9	
2/7 1850	1 est	55	8.6	81	2557	7.8	69	291	10.5	0.26	0.00	217	314	506	45	0.43		55	
3/4 1700	1	69	4.5	50	2137	7.3	5.67	12.68	0.26	0.00	0.00	217	6.54	14.27	0.72	0.41		80	
4/8 1830	Trickle to pond	70	7.0	78	3095	7.7			0	0.00	0.00	279	710	20.02		0.38		185	
5/6 1315	Ponded	73	12.0	138	3095	8.1	147	364	6.7	0.17	0.00	296	285	695	0.7	0.8	0.51	77	
6/10 1800	Ponded	70	8.4	94	2631	7.6	7.34	15.83	0.17	0.00	0.00	317	5.20	675	0.01	0.44		70	
7/1 1245	Ponded	84	16.5	212	3205	7.7			0	0.00	0.00	367	6.02	760		0.31		8	
8/12 1645	Ponded	86	14.6	192	3759	7.8			0	0.00	0.00	353	5.79	938		0.47		65	
9/3 1315	Ponded	87	27.0	354	3802	8.4	154	492	7.1	0.18	0.00	325	278	1010	8.2	0.4	0.51	200	
10/7 1745	Ponded	71	6.6	75	4032	7.6	7.88	21.4			0	463		28.48	0.13	0.02	0.55	40	Median 96
11/4 1410	Ponded	61	6.5	65	4098	7.3			0	0.00	0.00	533		1060		0.42		10	Max. 2400
12/2 1800	Ponded	50	10.0	88	2950	8.3			0	0.00	0.00	242		18.10		0.51		54	Min. 6

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{\text{ppm}}{1000}$  except as shown.

b Determined by addition of analyzed constituents

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-18  
ANALYSES OF SURFACE WATER  
SAN DIEGO REGION

Date and time sampled	Discharge Temp. in cfs	Dissolved oxygen	Specific conductance (micromhos at 25°C) f	Mineral constituents in parts per million								Total Dissolved solids in ppm g	Per cent sodium	Hardness as CaCO <sub>3</sub>	Turbidity in ppm	Coliform MPN/ml	Analyzed by a
				Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)	Barium (Ba)	Silica (SiO <sub>2</sub> )	Other constituents	
1957						SAN DIEGO RIVER BELOW SAN PASQUAL VALLEY											
1/7 1350	dry																
2/7 1630	dry																
3/4 1430	dry																
4/8 1635	dry																
May	dry																
June	dry																
July	dry																
Aug	dry																
9/3 1115	dry																
Oct	dry																
Nov	dry																
Dec	dry																

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{0.0}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBDPH) or State Department of Water Resources (DWR), as indicated

f Field pH except when noted with \*

TABLE B-18

## ANALYSES OF SURFACE WATER

## SAN DIEGO REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (micromhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved Solids in ppm	Percent Sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	per million										
																Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents		
1957																										
1/7 1200		58	5.0	48	641	7.9							0 0.00	157 2.57		46 1.30			0.00		28	218	-5	DWR		
2/7 1515	1 est	59	6.8	67	762	7.2							0 0.00	172 2.82		52 1.47			0.06		28	272	-5	DWR		
3/4 1215	1 est	62	7.0	72	745	7.1							0 0.00	169 2.77		49 1.38			0.04		29	260	-5	DWR		
4/8 1430	1 est	63	5.8	60	694	7.3							0 0.00	174 2.85		45 1.27			0.00		27	247	-5	DWR		
5/6 0945	1 est	62	---	--	666	7.3		64 3.19	21 1.73	46 2.00	5.0 0.13	0 0.00	166 2.72	141 2.94	45 1.27	0.5 0.01	0.2 0.01		0.04		455	28	246	110	-5	DWR
6/10 1450	1 est	61	7.0	70	669	7.3						0 0.00	174 2.85		45 1.27			0.05		28	248	-5	DWR			
7/1 0930	0.05	65	7.0	74	687	7.4						0 0.00	174 2.85		44 1.24			0.04		28	244	-5	DWR			
8/12 1305	ponded	72	8.2	93	673	7.5						0 0.00	170 2.79		46 1.30			0.00		28	250	-5	DWR			
9/3 0945	dry																									
10/7 1445	dry																									
11/4 1045	.02	59	7.2	71	734	7.3						0 0.00	179 2.93		52 1.47			0.00		28	256	-5		Median 16	DWR	
12/3 1445	0.04 est	57	7.6	73	694	7.2						0 0.00	178 2.92		44 1.24			0.00		28	245	-5		Max. 2400 Min. 0.45	DWR	

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{00}{100}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with a



TABLE B-18

## ANALYSES OF SURFACE WATER

## SAN DIEGO REGION

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen	Specific conductance (micromhos at 25°C)	Mineral constituents in parts per million											Total Dissolved Solids in ppm	Percent Sodium in ppm	Hardness as CaCO <sub>3</sub> in ppm	Turbidity in ppm	Coliform MPN/ml	Analyzed by					
					ppm	% Sat	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )							Fluoride (F)	Boron (B)	Silica (SiO <sub>2</sub> )	Other constituents	
1957																										
1/7 1100	Trickle	50	7.0	62	1314	7.5			10 0.33	361 5.92							0.20		51	315	-5	DWR				
2/7 1345	est 7	50	10.4	92	1329	8.4			0 0.00	318 5.21							0.27		49	338	-5	DWR				
3/4 1115	18	59	8.5	84	1228	7.8			0 0.00	299 4.90							0.25		50	305	50	DWR				
4/8 1300	- 1	61	7.0	70	1291	7.7			0 0.00	364 5.97							0.23		47	348	7	DWR				
5/6 0850	1 est	61	8.5	85	1226	7.7			3.7 0.09	147 6.39	29 2.38	90 4.49					0.28	20	48	344	36	DWR				
6/10 1345		64	7.8	82	1309	7.8			0.1 0.00	404 6.62							0.33		46	361	7	DWR				
7/1 0845	0.05 est	68	5.7	62	1366	7.5			10 0.33	405 6.64							0.28		46	336	7	DWR				
8/12 1200	ponded	75	8.0	93	1531	7.4			0 0.00	495 8.11							0.22		50	403	15	DWR				
9/3 0845	ponded	69	9.0	100	1592	8.0			0 0.00	392 6.43	111 2.32						0.40	25	60	310	0	DWR				
10/7 1230	ponded	71	17.2	195	1502	8.5			0 0.00	346 5.64							0.40		68	239	10 Median	DWR				
11/4 0945		87	8.0	77	1255	7.9			0 0.00	329 5.39							0.21		49	323	-5 Max.	DWR				
12/2 1330	1.6	48	8.4	72	1271	7.8			0 0.00	341 5.59							0.10		45	348	-5 Min.	DWR				

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{100}{1000}$  except as shown.

b Determined by addition of analyzed constituents.

c Gravimetric determination.

d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.

e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water &amp; Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.

f Field pH except when noted with \*.

Date and time sampled	Discharge in cfs	Temp in °F	Dissolved oxygen		Specific conductance (microhmhos at 25°C)	pH	Mineral constituents in parts per million										Total Dissolved solids in ppm	Per cent sodium	Hardness as CaCO <sub>3</sub>		Turbidity in ppm	Coliform MPN/ml	Analyzed by			
			ppm	% Sat			equivalents per million																			
							Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO <sub>3</sub> )	Bicarbonate (HCO <sub>3</sub> )	Sulfate (SO <sub>4</sub> )	Chloride (Cl)	Nitrate (NO <sub>3</sub> )	Fluoride (F)			Boron (B)	Silica (SiO <sub>2</sub> )				Other constituents		
1957	50	58	4.0	39	935	8.3	26 1.30	21 1.73	123 5.35	13.2 0.34	0 0.00	196 3.21	51 1.07	161 4.54	0.5 0.01	0.6 0.03		0.18 20		533	64	152	5000			DWR
1/7 1545	est																									
2/7 1730	dry																									
3/4 1600	dry																									
4/8 1745	dry																									
May	dry																									
June	dry																									
July	dry																									
Aug	dry																									
9/3 1230	dry																									
Oct	dry																									
11/4 1310		68	4.2	46	715	7.8					0 0.00	136 2.23		113 3.19			0.15				61	127	2500	Median 155,000 Max. 700,000 Min. 70,000		DWR
Dec.	dry																									

a Iron (Fe), aluminum (Al), arsenic (As), copper (Cu), lead (Pb), manganese (Mn), zinc (Zn), and chromium (Cr), reported here as  $\frac{\mu\text{g}}{\text{L}}$  except as shown.  
b Determined by addition of analyzed constituents.  
c Gravimetric determination.  
d Annual median and range, respectively. Calculated from analyses of duplicate monthly samples made by Calif. Dept. of Public Health, Division of Laboratories.  
e Mineral analyses made by USGS, Quality of Water Branch (USGS), Pacific Chemical Consultant (PCC), Metropolitan Water District (MWD), Los Angeles Dept. of Water & Power (LADWP), City of Los Angeles Dept. of Pub Health (LADPH), Long Beach Dept. of Pub Health (LBPH) or State Department of Water Resources (DWR), as indicated.  
f Field pH except when noted with a



TABLE B-19

## RADIOASSAY OF SURFACE WATERS

NORTH COASTAL REGION (NO.1)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
5	Eel River	McCann	5-7 9-11	45.1 ± 12.0 0	0 0	0 0	0 0
6	Eel River	Scotia	5-7 9-11	0 0	0 0	0 0	0.52 ± 0.38
7	Eel River, South Fork	Miranda	5-7 9-11	0 0	0 0	0.31 ± 0.45	0 0
1	Klamath River	Copco	5-7 9-18	0 0	0 0	0 0	0.52 ± 0.38
3	Klamath River	Klamath	5-9 9-11	0 0	0 0	0 0	0 0
2	Klamath River	Somesbar	5-10 9-12	0 0	0 0	0 0	0.72 ± 0.51
10	Russian River	Guerneville	5-6 9-10	0 0	0 0	0 0	0 0
9	Russian River	Healdsburg	5-6 9-10	0 0	6.10 ± 5.4	0 0	0 0
8a	Russian River	Hopland	5-6 9-10	0 0	6.66 ± 5.4	0 0	0 0
10b	Russian River	Ukiah	5-6 9-10	0 0	17.97 ± 6.6	0 0	0 0
8	Russian River, East Fork	Calpella	5-6 9-10	0 0	8.86 ± 5.8	0 0	1.15 ± 0.64
10a	Russian River, East Fork	Potter Valley Powerhouse	5-6 9-10	0 0	5.63 ± 5.4	0 0	0.32 ± 0.29



TABLE B-19  
RADIOASSAY OF SURFACE WATERS  
NORTH COASTAL REGION (NO. 1)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
3a	Smith River	Crescent City	5-8 9-11	0 0	0 0	0 0	0 0
4	Trinity River	Hoopla	5-10 9-12	0 0	0 0	0 0	0 0.42 ± 0.38
4a	Trinity River	Lewiston	5-14 9-11	0 0	0 0	0 0	0 0

TABLE B-20

## RADIOASSAY OF SURFACE WATERS

SAN FRANCISCO BAY REGION (NO. 2)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter				
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha	
73	Alameda Creek	Niles	5-16 9-12	0 0	12.4 $\pm$ 6.6 0	0 0	0 0	0 0
82	Coyote Creek	Madrone	5-16 9-13	14.9 $\pm$ 9.6 0	0 0	0 0	8.2 $\pm$ 0.61 0.52 $\pm$ 0.48	0 0
74	Los Gatos Creek	Los Gatos	5-16 9-12	12.1 $\pm$ 10.0 0	18.2 $\pm$ 6.8 0	0 0	0 0	0 0
72	Napa River	Saint Helena	5-14 9-11	0 8.78 $\pm$ 5.6	0 0	0 0	0 0	0 0



TABLE B-21

## RADIOASSAY OF SURFACE WATERS

CENTRAL COASTAL REGION (NO. 3)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
83	Carmel River	Carmel	5-15 9-12	0 0	0 0	0 0	0 0
77	Pajaro River	Chittenden	5-15 9-12	0 0	6.73 $\pm$ 6.6 5.63 $\pm$ 5.1	0 0	0 0
43a	Salinas River	Paso Robles	5-7 Sept.	0 Dry	7.80 $\pm$ 6.8	0	0
75	San Lorenzo River	Big Tree (nr Felton)	5-15 9-12	0 0	7.32 $\pm$ 6.8 5.93 $\pm$ 5.2	0 0	0.9 $\pm$ 0.5 0
45	Santa Ynez River	Los Laureles Canyon	5-8 Sept.	13.2 $\pm$ 11.8 Dry	7.72 $\pm$ 6.7	0	0
45a	Santa Ynez River	Solvang	5-8 Sept.	0 Dry	7.55 $\pm$ 6.8	0	0
76	Soquel Creek	Soquel	5-14 9-12	0 0	0 6.28 $\pm$ 5.2	0 0	0.4 $\pm$ 0.3 0
96	Uvas Creek	Morgan Hill	5-16	0	0	0	0





# RADIOASSAY OF SURFACE WATERS

LOS ANGELES REGION (NO. 4)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
48	Los Angeles River	Long Beach	5-24 9-19	0 12.20 ± 6.1	0 7.60 ± 7.5	0 0	0.6 ± 0.5 1.76 ± 0.82
47	Los Angeles River	Los Angeles	5-24 9-19	0 0	0 0	0 0	0.7 ± 0.5
45b	Matilija Creek	Matilija Dam	5-8 9-4	0 0	0 0	0 0	0 0
49a	Mission Creek	Whittier Narrows	5-7 9-4	0 9.84 ± 5.7	0 8.06 ± 6.1	0 0	0 0
46c	Piru Creek	Piru	9-3	14.58 ± 5.8	0	0.83 ± 0.69	0
49	Rio Hondo River	Whittier Narrows	5-7 9-4	0 9.84 ± 5.7	0 8.06 ± 6.1	0 0	1.3 ± 0.7
50d	San Gabriel River	Azusa Powerhouse	9-4	7.00 ± 5.0	0	0	0
50	San Gabriel River	Whittier Narrows	5-7 9-	0 Dry	0	0	0
46b	Santa Clara River	Blue Cut	5-6 9-3	0 8.81 ± 5.6	0 0	0 0	0 0
46	Santa Clara River	LA-Ventura Co. Line	5-6 9-3	0 7.74 ± 5.7	0 0	0 0	0 0
46a	Santa Clara River	Santa Paula	5-6 9-3	0 6.50 ± 5.7	0 0	0.5 ± 0.5 0	0 0
46e	Santa Paula Creek	Santa Paula	9-3	0	0	0	0
46d	Sespe Creek	Fillmore	9-3	0	0	0	0
61	Ventura River	Ventura	5-6 9-3	0 9.01 ± 5.7	0 0	0 0	0.6 ± 0.6



TABLE B-23

## RADIOASSAY OF SURFACE WATERS

CENTRAL VALLEY REGION (No. 5)

Sta. No.	Stream	Near	Date	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
22	American River	Sacramento	5-9 9-23	0 0	7.89 $\pm$ 6.7 5.36 $\pm$ 5.3	0 0	0 0
78	Bear River	Wheatland	5-6 9-16	0 0	0 0	0 0	0 0
17c	Burney Creek	Burney	5-8 9-18	0 0	0 0	0 0	0.7 $\pm$ 0.5 0.52 $\pm$ 0.45
80	Cache Creek	Capay	5-10 9-10	0 0	0 6.58 $\pm$ 5.7	0.5 $\pm$ 0.3 0	0 0
42	Cache Creek	Lower Lake	5-14 9-11	0 0	0 0	0 0	0 0
79	Cache Creek, North Fork	Lower Lake	5-13 9-11	0 0	0 0	0 0	0 0
16a	Calaveras River	Jenny Lind	5-7 9-10	0 0	7.1 $\pm$ 6.4 0	0 0	0.4 $\pm$ 0.4 0
40	Clear Lake	Clear Oaks	5-13 9-11	0 0	0 0	0 0	0 0
41	Clear Lake	Lakeport	5-14 9-11	0 0	0 0	0 0	0 0
12b	Cottonwood Creek	Cottonwood	5-7 9-17	0 0	0 0	0 0	0 0
92	Delta-Mendota Canal	Mendota	5-13 9-24	0 5.86 $\pm$ 5.8	0 6.87 $\pm$ 6.0	0 0	1.6 $\pm$ 0.7 0



## RADIOASSAY OF SURFACE WATERS

CENTRAL VALLEY REGION (NO. 5)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
20	Feather River	Nicolaus	5-6 9-16	0 8.44 ± 5.1	0 0	0 0	0 0
19	Feather River	Oroville	5-7 9-16	0 0	0 0	0 0	0 0
17d	Indian Creek	Crescent Mills	5-9 9-19	0 0	0 0	0 0	0.5 ± 0.4 0.83 ± 0.59
35	Kaweah River	Three Rivers	5-14 9-25	0 0	0 0	0 0	0 0
36	Kern River	Bakersfield	5-14 9-25	12.1 ± 10.0 0	13.2 ± 9.8 8.40 ± 5.5	0.8 ± 0.6 0	0 0.62 ± 0.53
36a	Kern River	Isabella Dam	5-13 9-16	14.1 ± 10.2 0	0 6.31 ± 5.5	0 0.80 ± 0.53	0.9 ± 0.4 1.15 ± 0.56
36b	Kern River	Kernville	5-13 9-16	0 10.02 ± 5.7	0 7.10 ± 5.5	0.5 ± 0.5 0	1.0 ± 0.5 0
33c	Kings River	Below N. Fork	5-16 9-13	0 0	0 0	0 0	0 0
34	Kings River	Peoples Weir	5-15 9-25	0 0	0 0	0 0	0 0
33b	Kings River	Pine Flat Dam	5-16 9-13	0 0	0 0	0 0	0 0
18	McCloud River	Shasta Lake	5-15 9-11	0 0	0 0	0 0	0 0
32a	Merced River	Exchequer Dam	5-15 9-26	0 0	0 5.79 ± 5.1	0 0	0 0
32	Merced River	Stevinson	5-15 9-26	0 0	6.53 ± 6.7 10.21 ± 5.2	0 0	0 0

TABLE B-23

## RADIOASSAY OF SURFACE WATERS

CENTRAL VALLEY REGION ( NO. 5)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
23a	Mokelumne River	Lancha Plana	5-7 9-13	0 0	$10.5 \pm 6.5$ 0	0 0	0 $0.72 \pm 0.56$
23	Mokelumne River	Woodbridge	5-17 9-27	0 0	$14.7 \pm 6.7$ 0	0 0	0 0
108	Old River	Orwood Bridge	5-8	0	$9.13 \pm 8.8$	0	0
17a	Pit River	Canby	5-8 9-18	$10.4 \pm 9.8$ 0	0 0	$0.6 \pm 0.4$ 0	$0.4 \pm 0.4$ 0
17	Pit River	Montgomery Creek	5-15 9-11	0 0	0 0	0 0	0 $0.62 \pm 0.48$
81	Putah Creek	Winters	5-10 9-10	0 0	0 0	0 0	0 0
109	Rock Slough	Knightsen	5-8	$12.5 \pm 10.4$	0	$1.23 \pm 0.7$	$0.4 \pm 0.3$
11	Sacramento River	Delta	5-14 9-12	0 0	0 0	0 0	0 0
13	Sacramento River	Hamilton City	5-7 9-17	0 0	$5.93 \pm 5.1$	0 0	0 0
12	Sacramento River	Keswick	5-14 9-10	0 0	$10.5 \pm 6.6$ 0	0 0	0 0
14	Sacramento River	Knights Landing	5-13 9-10	0 0	$10.1 \pm 6.6$ 0	0 $0.31 \pm 0.29$	0 0
12a	Sacramento River	Redding	5-16 9-10	0 0	0 0	0 $0.52 \pm 0.38$	0 0

TABLE B-23

## RADIOASSAY OF SURFACE WATERS

CENTRAL VALLEY REGION (NO. 5)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
16	Sacramento River	Rio Vista	5-9 9-12	0 0	0 0	0 0	0 0
15	Sacramento River	Sacramento	5-10 9-24	0 0	5.69 $\pm$ 5.2	0 0	0 0
14a	Sacramento Slough	Knights Landing	5-13 9-10	0 0	0 0	0 0	0 0
28	San Joaquin River	Antioch	5-9 9-12	0 6.60 $\pm$ 5.5	0 0	0 0	0 1.46 $\pm$ 0.72
25a	San Joaquin River	Dos Palos	5-13 9-24	0 21.21 $\pm$ 5.5	0 8.35 $\pm$ 5.0	0 0	1.1 $\pm$ 0.6 1.45 $\pm$ 0.63
24	San Joaquin River	Friant	5-13 9-25	0 0	14.1 $\pm$ 7.0	0 0	0 0
26	San Joaquin River	Grayson	5-16 9-27	11.0 $\pm$ 7.0 13.48 $\pm$ 5.5	0 0	0 0.52 $\pm$ 0.45	0.8 $\pm$ 0.6 0.91 $\pm$ 0.56
26a	San Joaquin River	Maze Road Bridge	5-16 9-27	7.61 $\pm$ 7.0 10.94 $\pm$ 5.5	0 0	0.7 $\pm$ 0.5 0.52 $\pm$ 0.45	0 0
25	San Joaquin River	Mendota	5-13 9-24	0 7.53 $\pm$ 5.8	0 6.09 $\pm$ 5.2	0 0	0 0
27	San Joaquin River	Vernalis	5-16 9-27	0 13.02 $\pm$ 5.6	0 0	0.5 $\pm$ 0.4 0.52 $\pm$ 0.45	0 0

TABLE B-23

## RADIOASSAY OF SURFACE WATERS

CENTRAL VALLEY REGION (No. 5)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
29	Stanislaus River	Mouth	5-17 9-27	0 8.22 ± 6.0	0 11.52 ± 5.4	0 0	0.6 ± 0.5
29a	Stanislaus River	Tulloch Dam	5-16 9-26	0 0	0 0	0 0	0 0
13a	Stony Creek	Hamilton City	5-7 9-17	0 0	0 0	0 0	0 1.15 ± 0.56
31a	Tuolumne River	Below Don Pedro Dam	5-16 9-26	0 0	0 7.01 ± 5.1	0 0	0.6 ± 0.5
30	Tuolumne River	Hickman-Waterford Bridge	5-16 9-26	7.86 ± 6.7 0	0 0	0 0	0 0
31	Tuolumne River	Tuolumne City	5-16 9-27	0 7.99 ± 5.9	0 0	0 1.21 ± 0.63	0 0
21	Yuba River	Marysville	5-6 9-16	0 0	0 0	0 0	0 0
21a	Yuba River	Smartsville	5-6 9-16	0 0	6.70 ± 6.5 0	0 0	0 0





## RADIOASSAY OF SURFACE WATERS

LAHONTAN REGION (NO. 6)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
39	Lake Tahoe	Bi-jou	5-9 9-20	0 6.36 $\pm$ 5.7	0 0	0 0	0 0
38	Lake Tahoe	Tahoe City	5-9 9-19	0 0	0 0	0.41 $\pm$ 0.39 0	0 0.52 $\pm$ 0.45
37	Lake Tahoe	Tahoe Vista	5-9 9-20	0 0	0 11.59 $\pm$ 6.1	0 0	0 0
67a	Mojave River	The Forks	9-4	8.98 $\pm$ 5.9	0	0	0.52 $\pm$ 0.38
67	Mojave River	Victorville	5-9 9-4	0 6.70 $\pm$ 5.9	0 0	1.0 $\pm$ 0.71 0	0 1.04 $\pm$ 0.64
17b	Susan River	Susanville	5-8 9-19	0 9.17 $\pm$ 5.7	0 0	0 0	0 1.15 $\pm$ 0.62
53	Truckee River	Farad	5-9 9-19	0 8.85 $\pm$ 5.9	0 0	0 0	0.71 $\pm$ 0.59 0
52	Truckee River	Truckee	5-9 9-19	0 8.21 $\pm$ 5.7	0 9.26 $\pm$ 5.2	0 0	0 0



## RADIOASSAY OF SURFACE WATERS

COLORADO RIVER BASIN ( NO. 7)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta		Solid Beta	Dissolved Alpha
60	Alamo River	Calipatria	5-7 9-4	0 13.81 ± 5.7	0 6.86 ± 5.8	0 0	1.5 ± 0.7 0
59	Alamo River	International Boundary	5-7 9-4	0 9.95 ± 5.6	0 0	0 0	0.7 ± 0.6 0
56a	All American Canal	Pilot Knob	5-15 9-16	0 6.13 ± 5.7	0 6.14 ± 6.0	0 0	0.41 ± 0.33 0
56c	Colorado River	Blythe	5-15 9-17	0 9.11 ± 5.8	0 0	0.8 ± 0.6 0	0 0
56b	Colorado River	Morelos Dam	5-15 9-16	0 9.25 ± 5.8	0 0	0 0	0.91 ± 0.64 0
55	Colorado River	Parker Dam	5-15 9-17	0 12.63 ± 5.9	0 0	0 0	0 0
54	Colorado River	Topock, Arizona	5-14 9-17	0 9.95 ± 5.9	0 0	0 1.14 ± 0.62	0 0
56	Colorado River	Yuma, Arizona	5-15 9-16	0 10.35 ± 5.7	0 6.86 ± 6.2	0 0	0 0
57	New River	Internl. Boundary	5-7 9-4	8.96 ± 8.4 0	0.8 ± 6.7 0	0 0	0.72 ± 0.69 0
58	New River	Westmorland	5-7 9-4	0 7.30 ± 5.6	0 8.19 ± 5.9	0 0	1.2 ± 0.6 0
68a	Salton Sea	State Park	9-4	7.10 ± 5.7	0	0	0
68b	Whitewater River	Mecca	9-4	0	0	0.62 ± 0.41	1.77 ± 0.86
68	Whitewater River	Whitewater	5-7 9-4	25.5 ± 11.4 16.82 ± 5.8	0 9.32 ± 5.7	0 0	1.2 ± 0.7 0.62 ± 0.59





TABLE B-26

## RADIOASSAY OF SURFACE WATERS

SANTA ANA REGION (No. 8)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
89	Lake Elsinore	North Shore	9-3	22.92 $\pm$ 6.4	50.58 $\pm$ 8.1	0	0
51b	Santa Ana	Mentone	5-7	27.9 $\pm$ 13.6	0	2.06 $\pm$ 0.8	0
			9-5	28.05 $\pm$ 6.0	0	2.50 $\pm$ 0.84	0
51e	Santa Ana River	Norco	5-7	0	0	0	0.9 $\pm$ 0.7
			9-4	0	0	0	0
51a	Santa Ana River	Prado Dam	5-7	0	0	0	0
			9-4	26.98 $\pm$ 7.0	0	0	0.62 $\pm$ 0.48
51d	Santa Ana River	Riverside	5-7	14.3 $\pm$ 13.4	0.7 $\pm$ 6.6	0	0
			9-4	13.00 $\pm$ 5.7	0	0.72 $\pm$ 0.64	0
50b	Warm Creek	Colton	5-7	0	0	0	0.5 $\pm$ 0.4
50c	Warm Creek	San Bernardino	5-7	0	0	0.5 $\pm$ 0.4	2.4 $\pm$ 1.0



TABLE B-27

## RADIOASSAY OF SURFACE WATERS

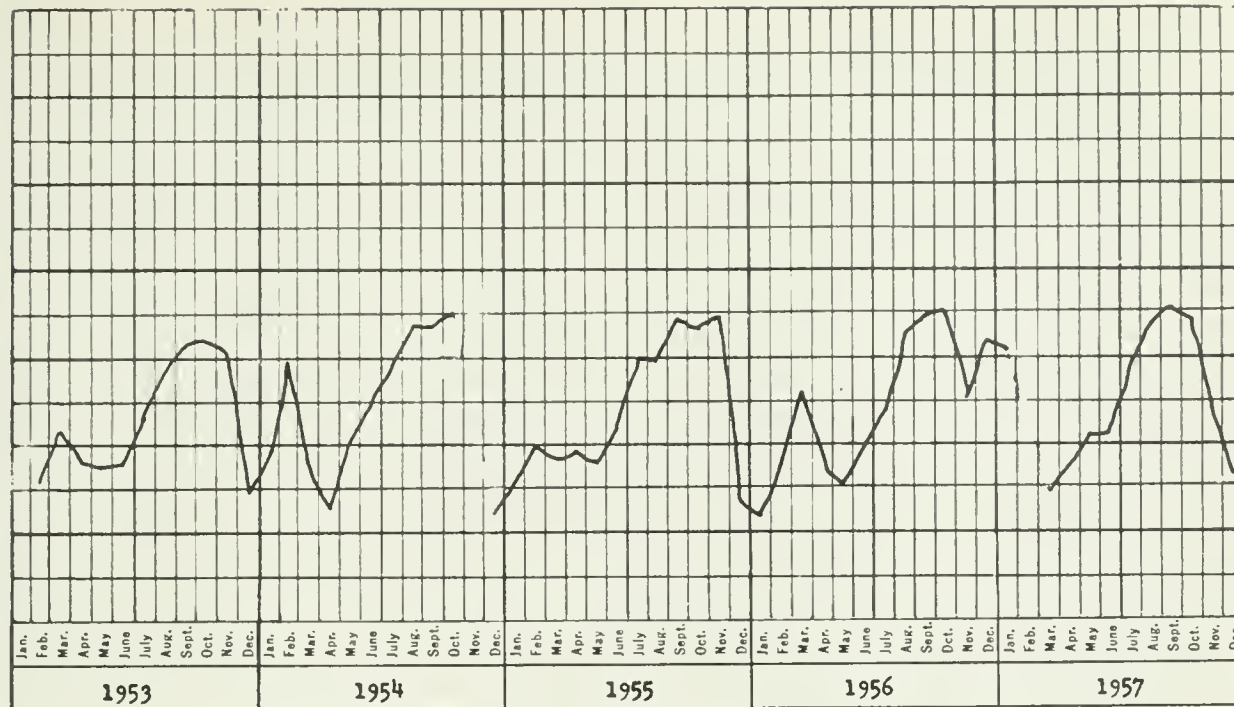
SAN DIEGO REGION (NO. 9)

Sta. No.	Stream	Near	Date 1957	Micro-micro curies per liter			
				Dissolved Beta	Solid Beta	Dissolved Alpha	Solid Alpha
63	Escondido	Harmony Grove	5-6 9-3	0 10.49 $\pm$ 5.8	0 0	0 0	0 0
65a	Forester Creek	Mission Gorge Road	9-3	13.10 $\pm$ 5.8	0	0	0
65	San Diego River	Old Mission Dam	5-6 9-3	0 7.84 $\pm$ 5.4	0 0	0 0	2.4 $\pm$ 0.90 1.35 $\pm$ 0.64
62	San Luis Rey River	Pala	5-6	19.9 $\pm$ 11.2	0	0	0.82 $\pm$ 0.66
51c	Santa Margarita River	Fallbrook	5-6 9-3	0 0	0 0	0 0	0.70 $\pm$ 0.61 0.83 $\pm$ 0.59



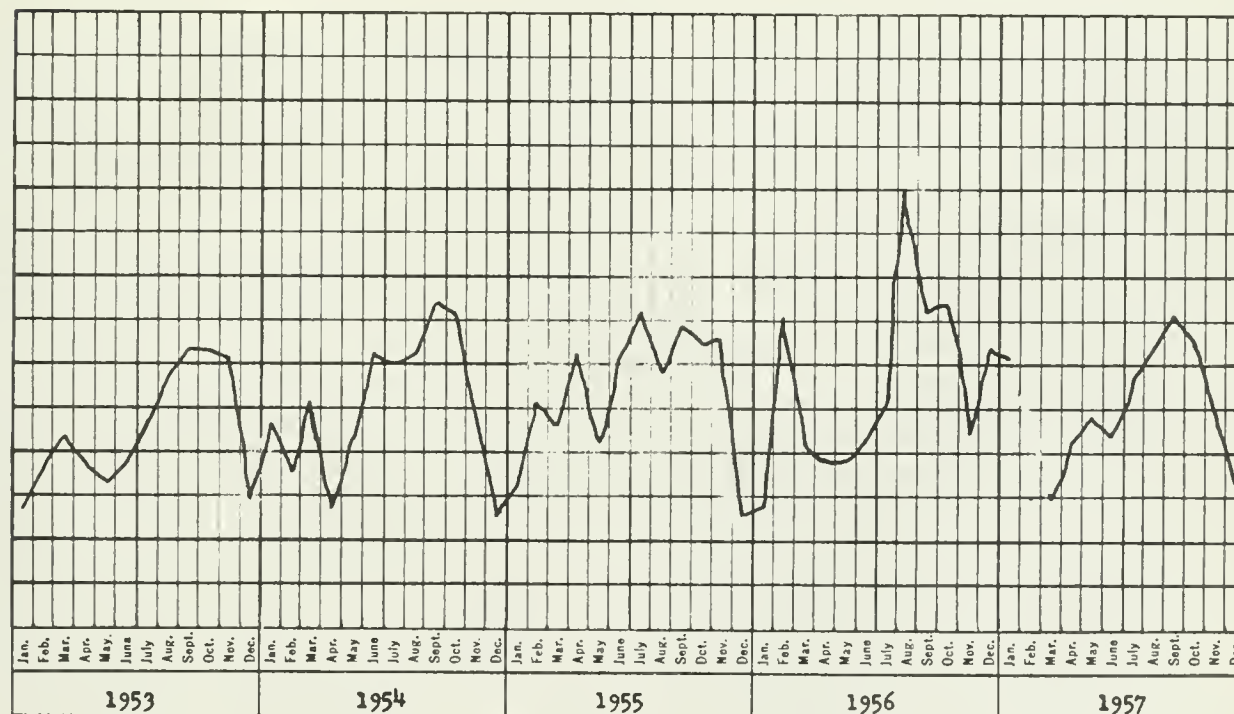


TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



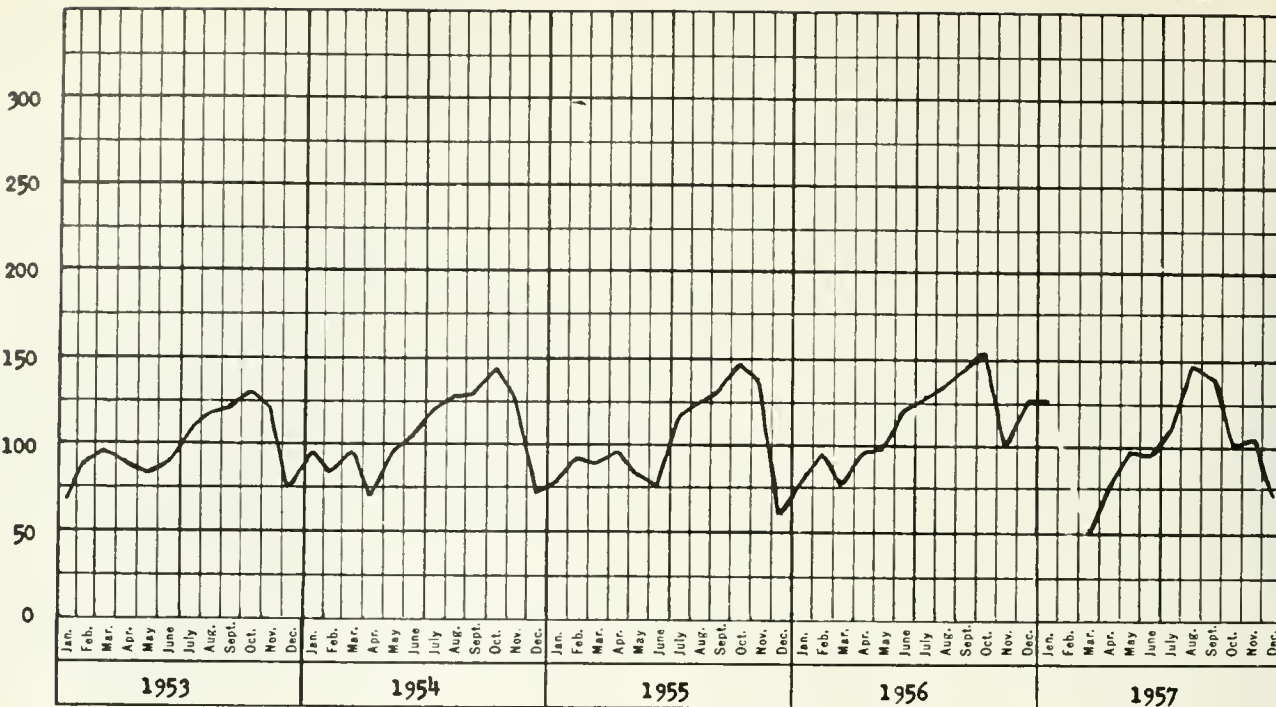
QUALITY CHARACTERISTICS  
OF  
EEL RIVER NEAR McCANN  
(STATION 5)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



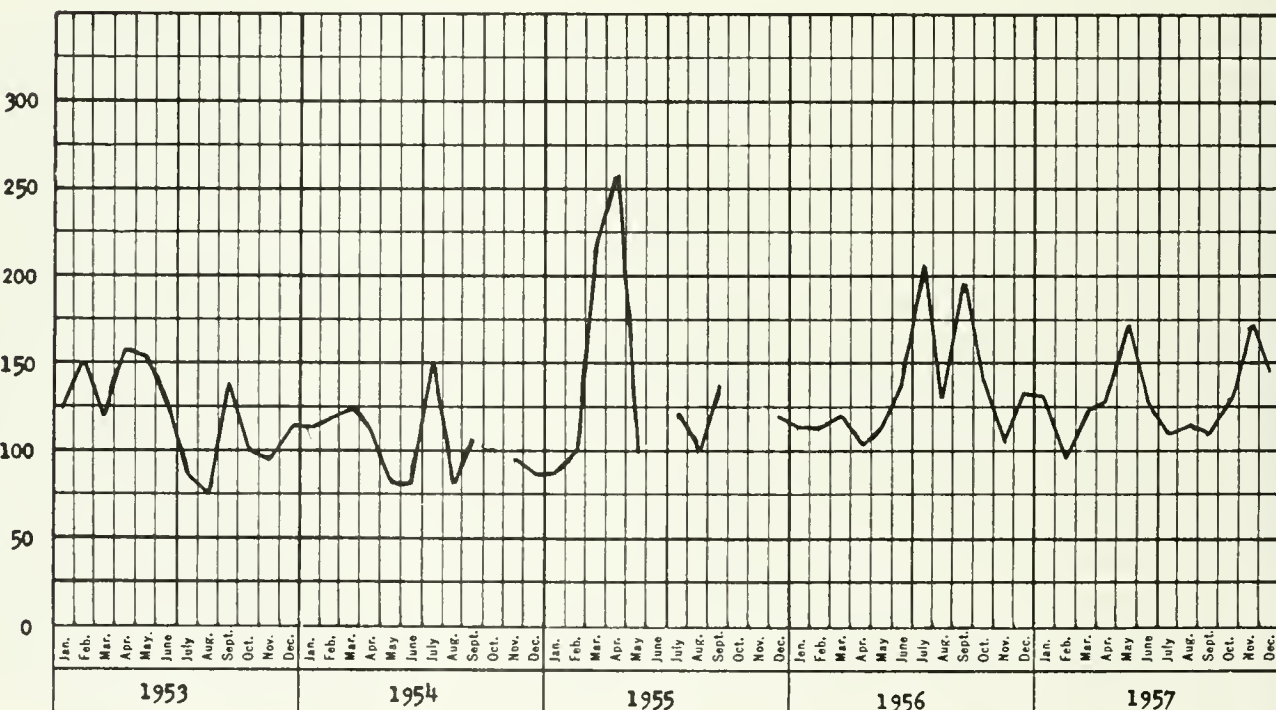
QUALITY CHARACTERISTICS  
OF  
EEL RIVER AT SCOTIA  
(STATION 6)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION

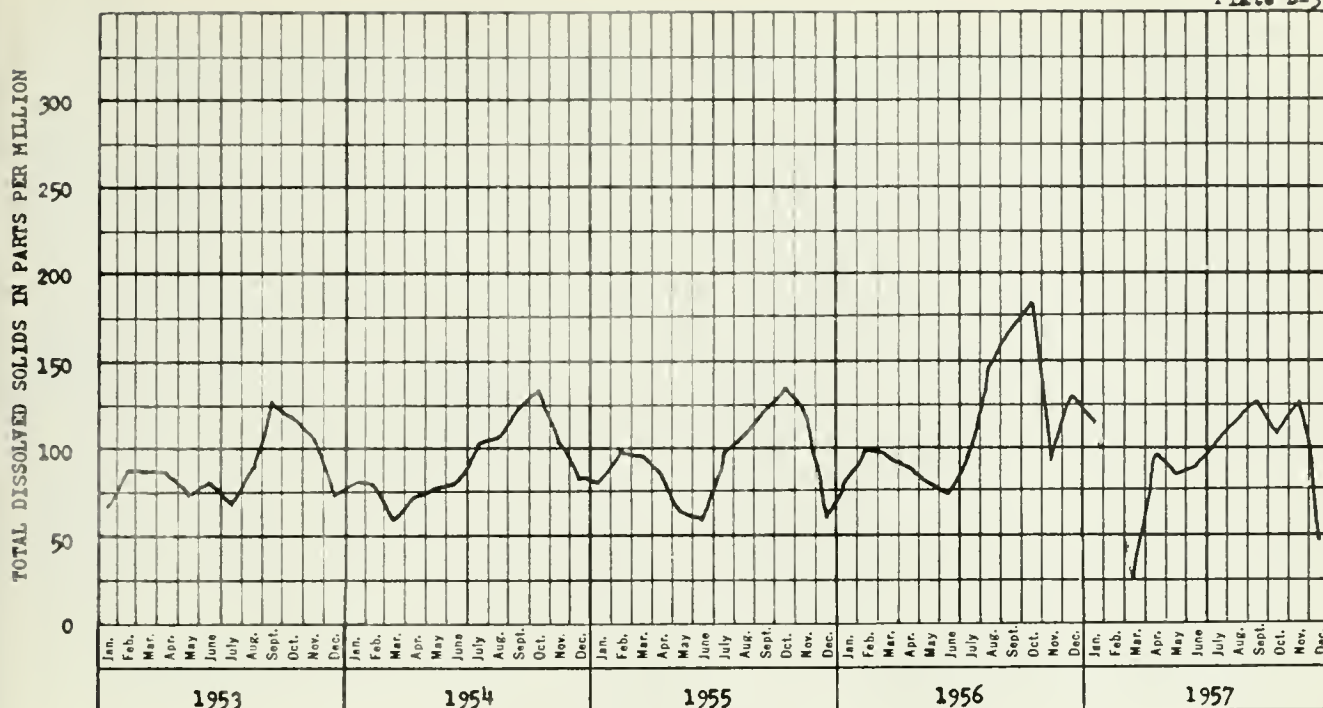


QUALITY CHARACTERISTICS  
OF  
KEL RIVER, SOUTH FORK, NEAR MIRANDA  
(STATION 7)

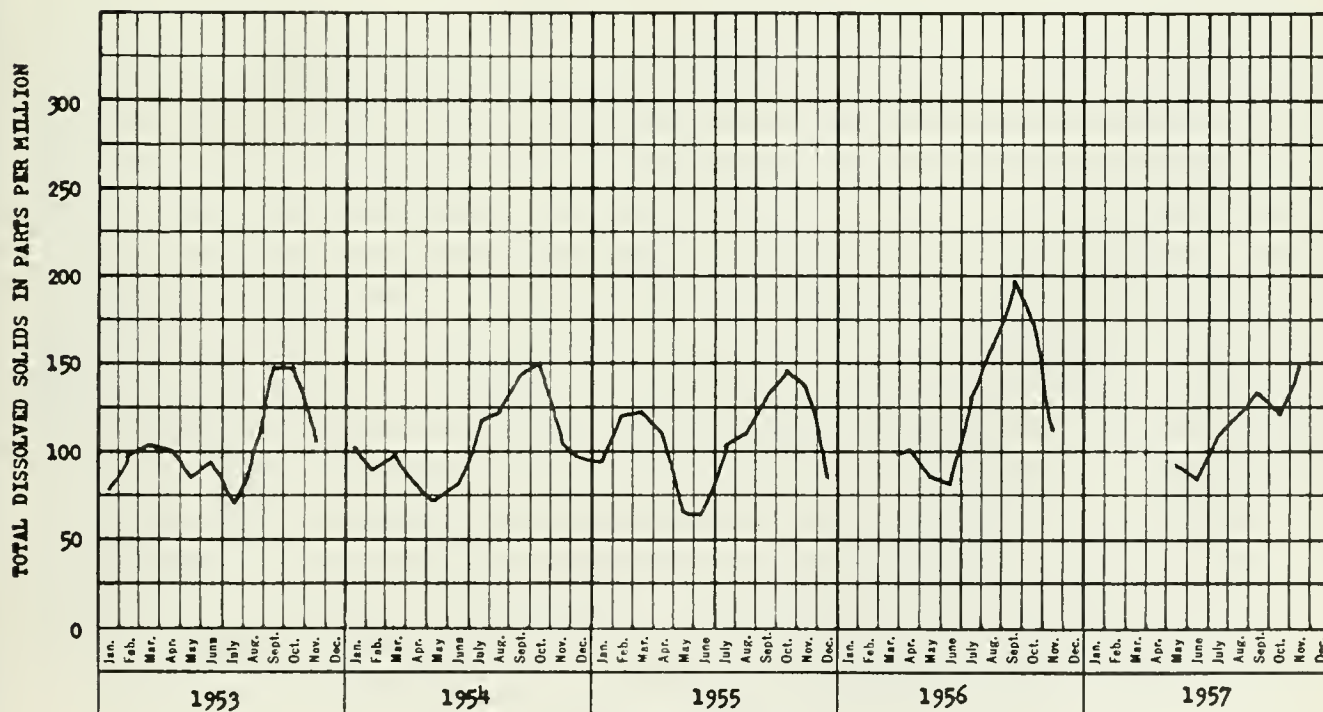
TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



QUALITY CHARACTERISTICS  
OF  
KLAMATH RIVER NEAR COPCO  
(STATION 1)



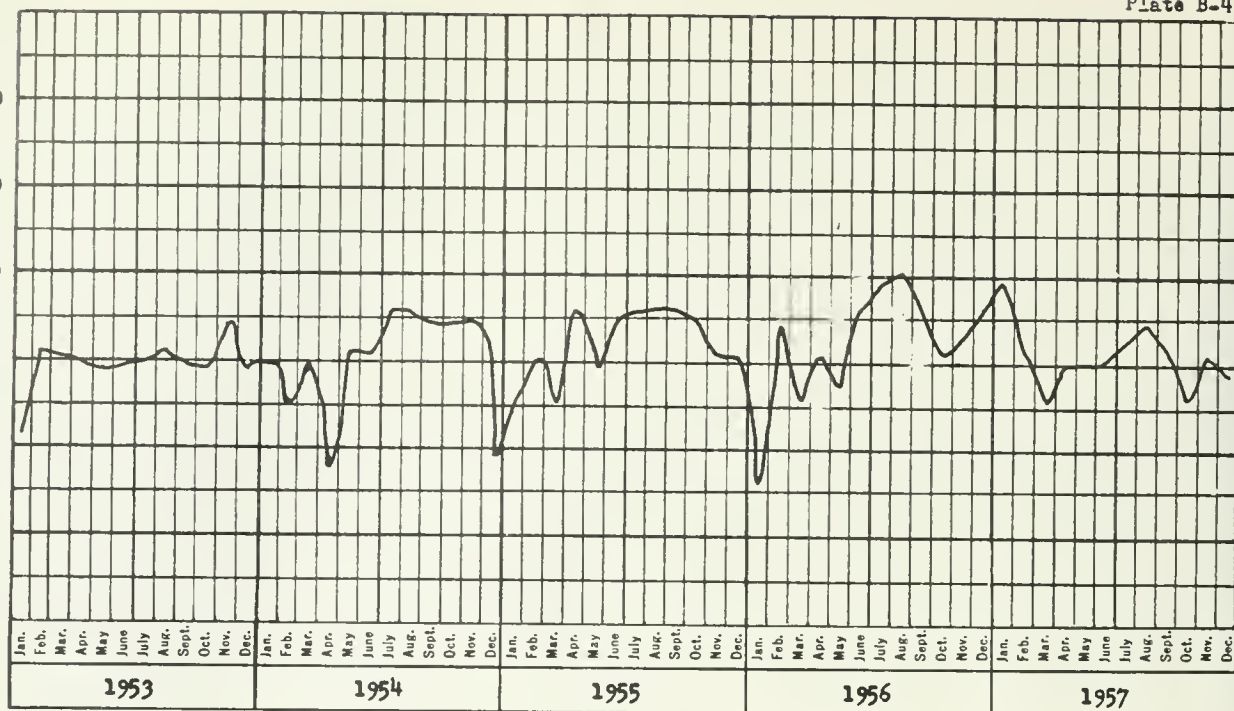
QUALITY CHARACTERISTICS  
OF  
KLAMATH RIVER NEAR KLAMATH  
(STATION 3)



QUALITY CHARACTERISTICS  
OF  
KLAMATH RIVER AT SOMESBAR  
(STATION 2)

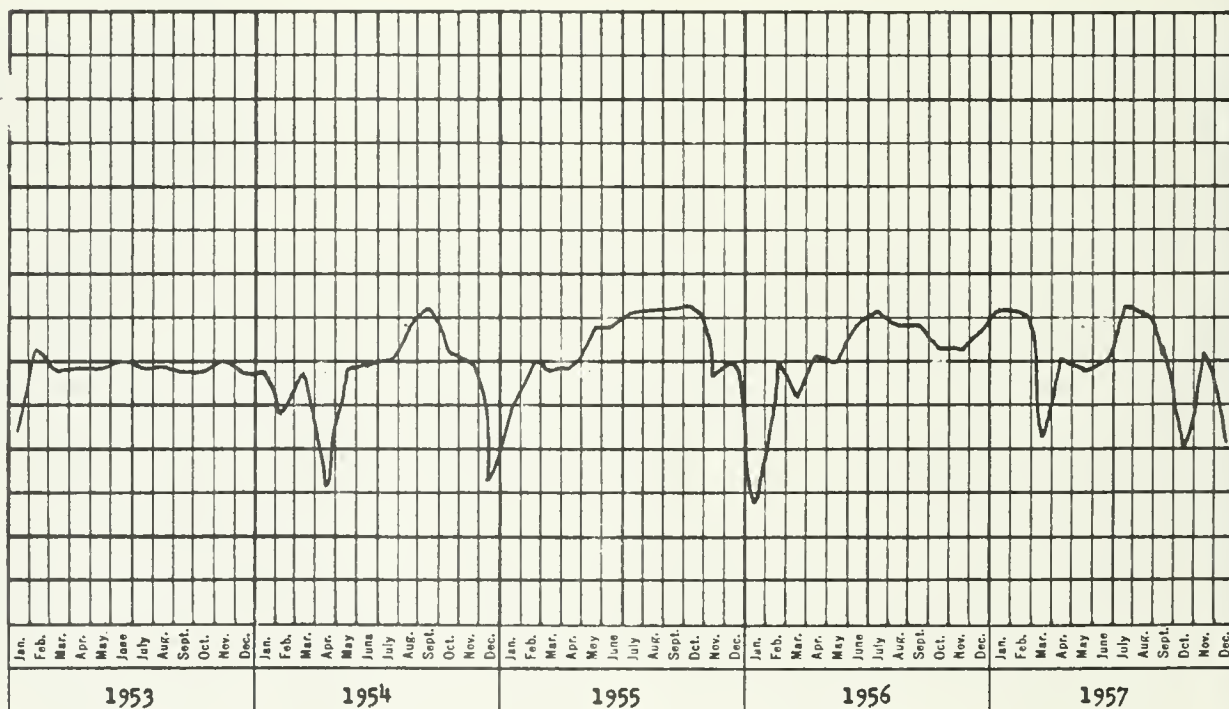


TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION

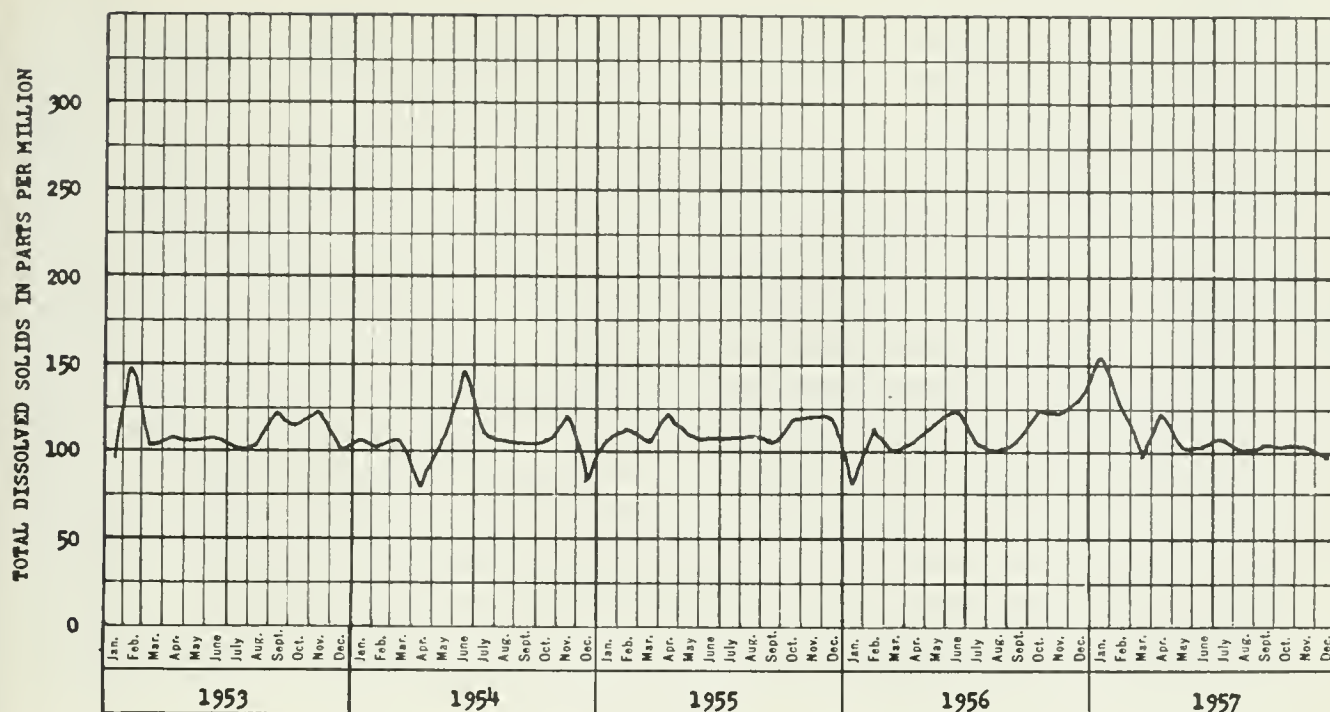


QUALITY CHARACTERISTICS  
OF  
RUSSIAN RIVER AT GUERNEVILLE  
(STATION 10)

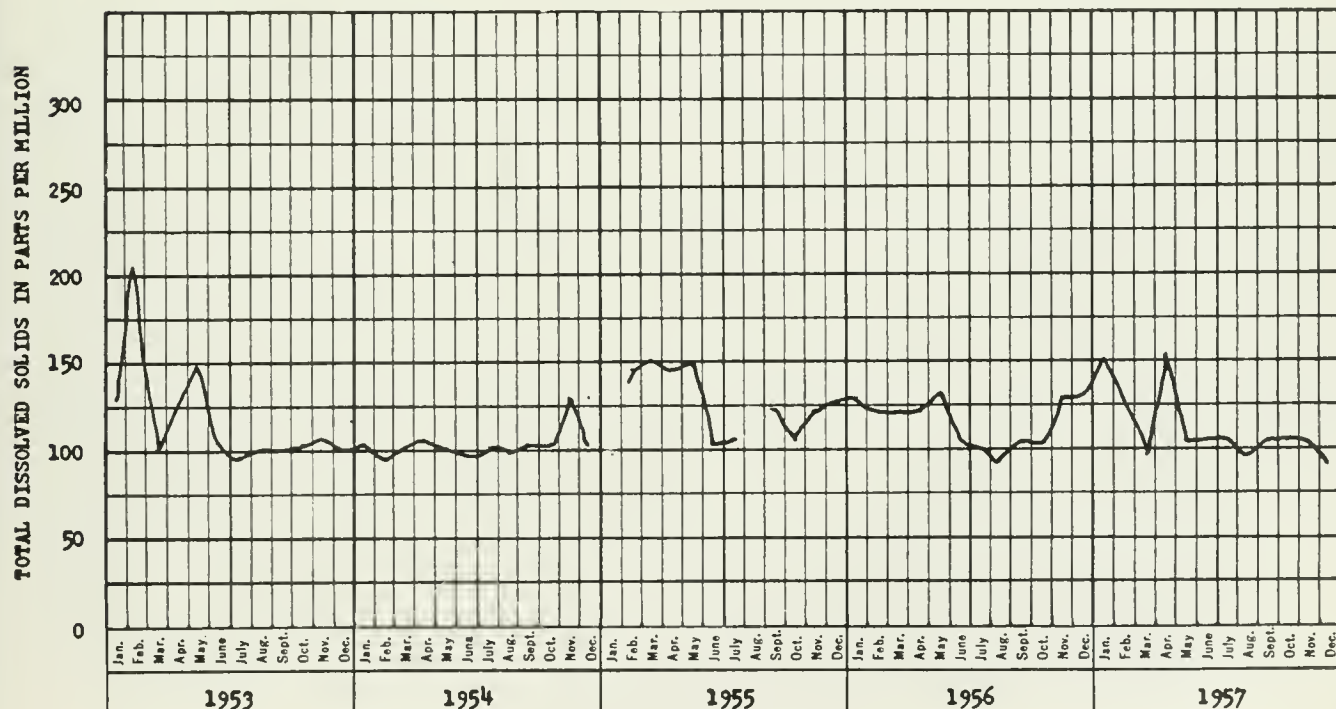
TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



QUALITY CHARACTERISTICS  
OF  
RUSSIAN RIVER NEAR HEALDSBURG  
(STATION 9)

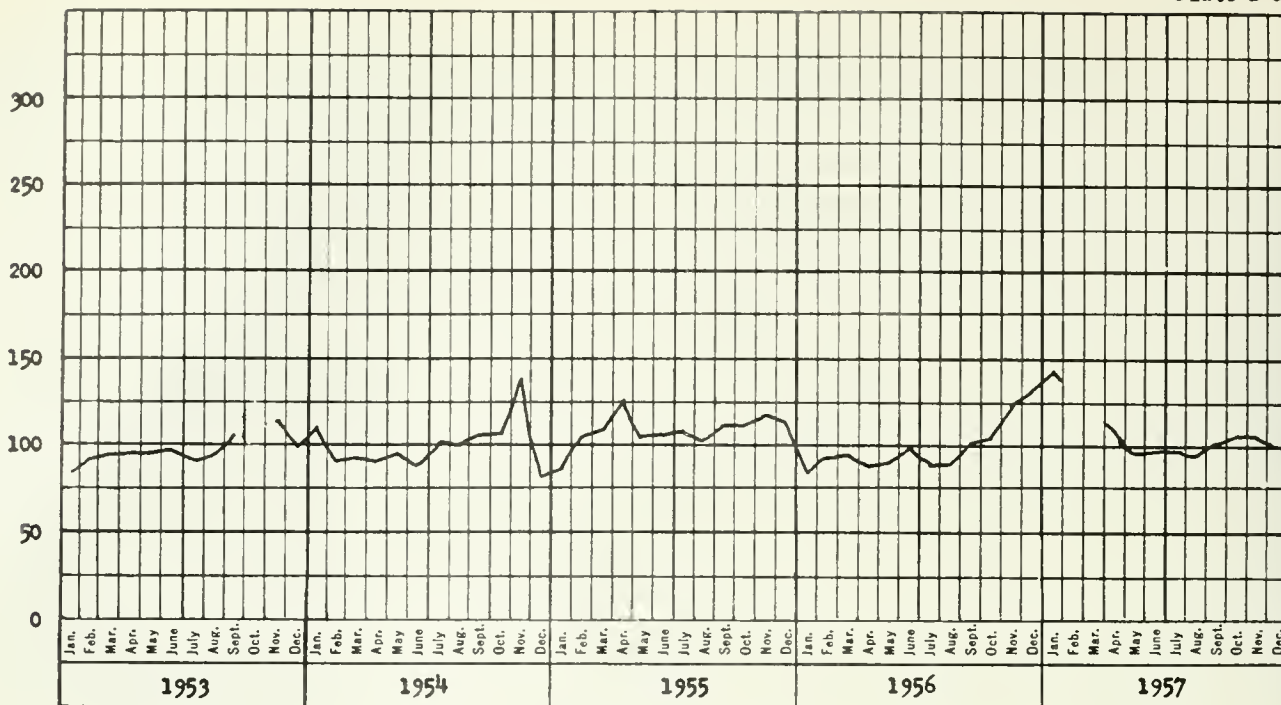


QUALITY CHARACTERISTICS  
OF  
RUSSIAN RIVER NEAR HOPLAND  
(STATION 8A)



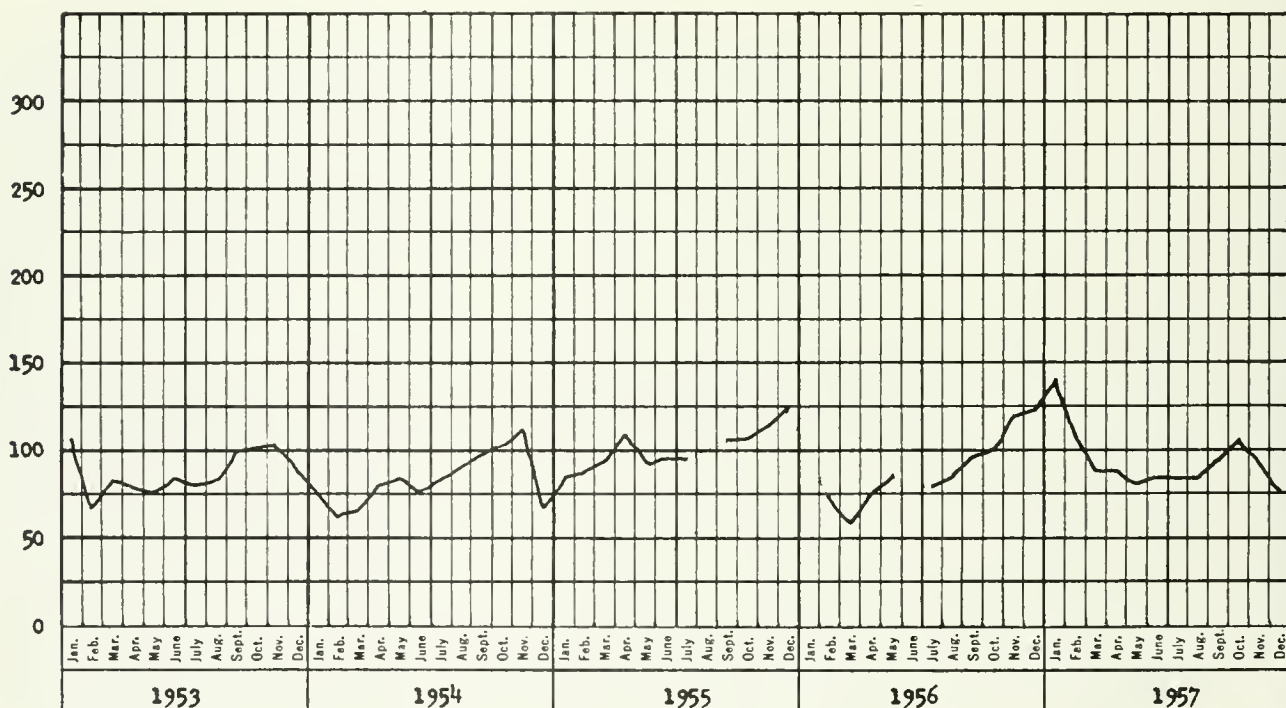
QUALITY CHARACTERISTICS  
OF  
RUSSIAN RIVER NEAR UKIAH  
(STATION 10B)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



QUALITY CHARACTERISTICS  
OF  
RUSSIAN RIVER, EAST FORK, NEAR CALPELLA  
(STATION 8)

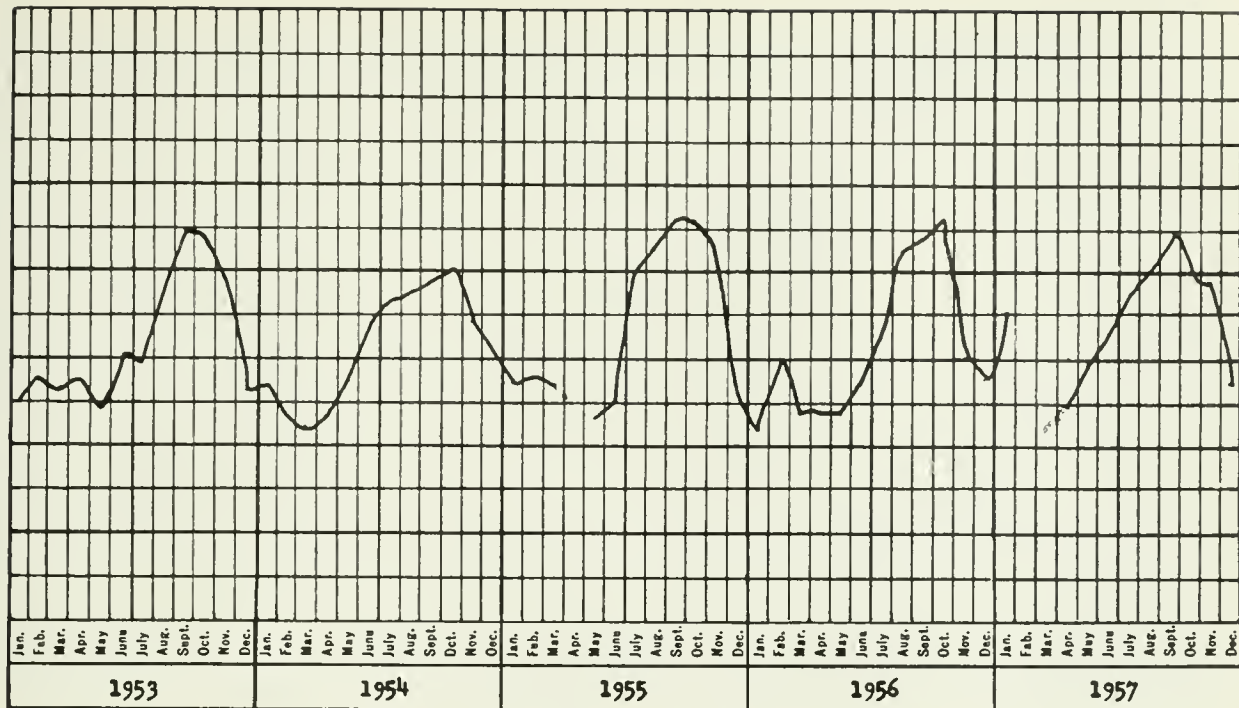
TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



QUALITY CHARACTERISTICS  
OF  
RUSSIAN RIVER, EAST FORK, AT POTTER VALLEY POWERHOUSE  
(STATION 10A)

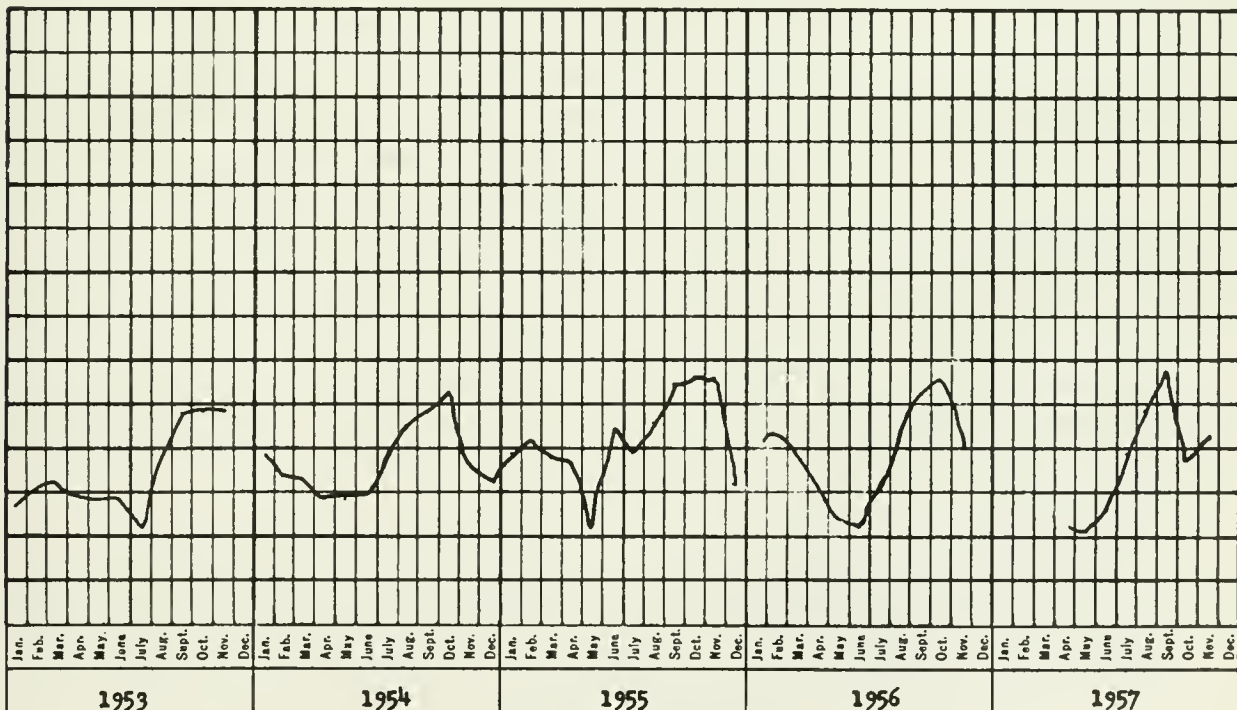


TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



QUALITY CHARACTERISTICS  
OF  
SMITH RIVER NEAR CRESCENT CITY  
(STATION 3A)

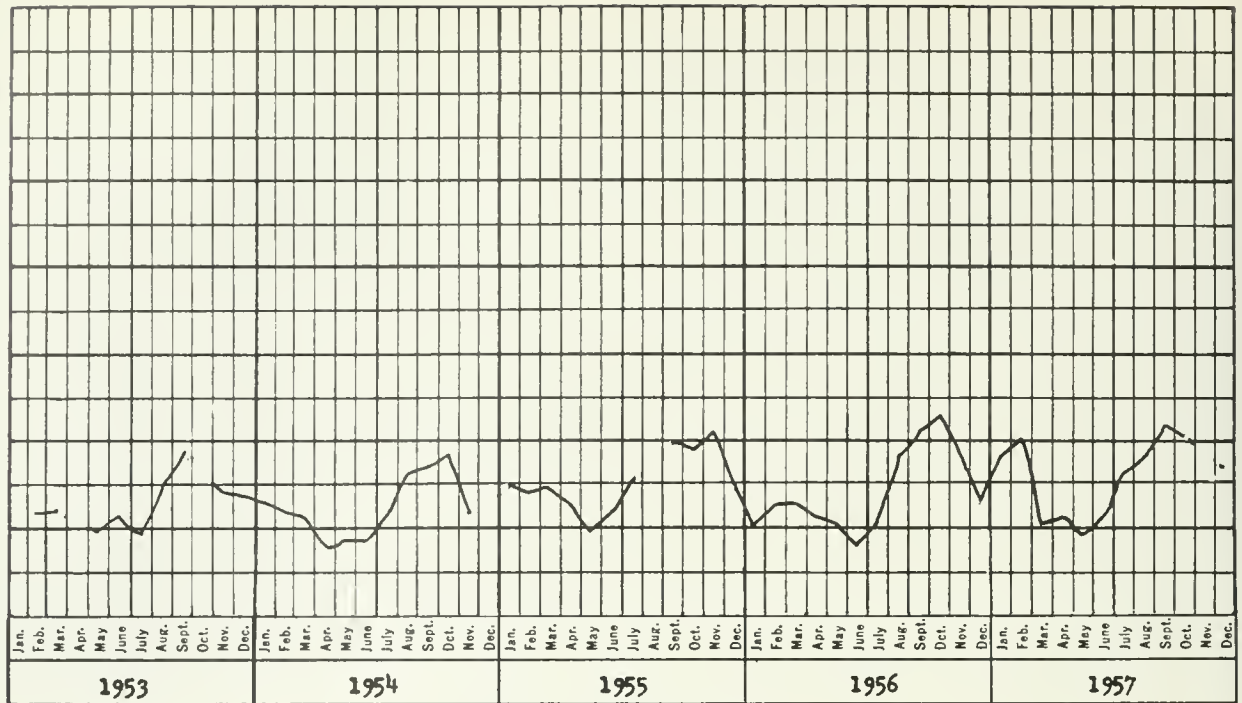
TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



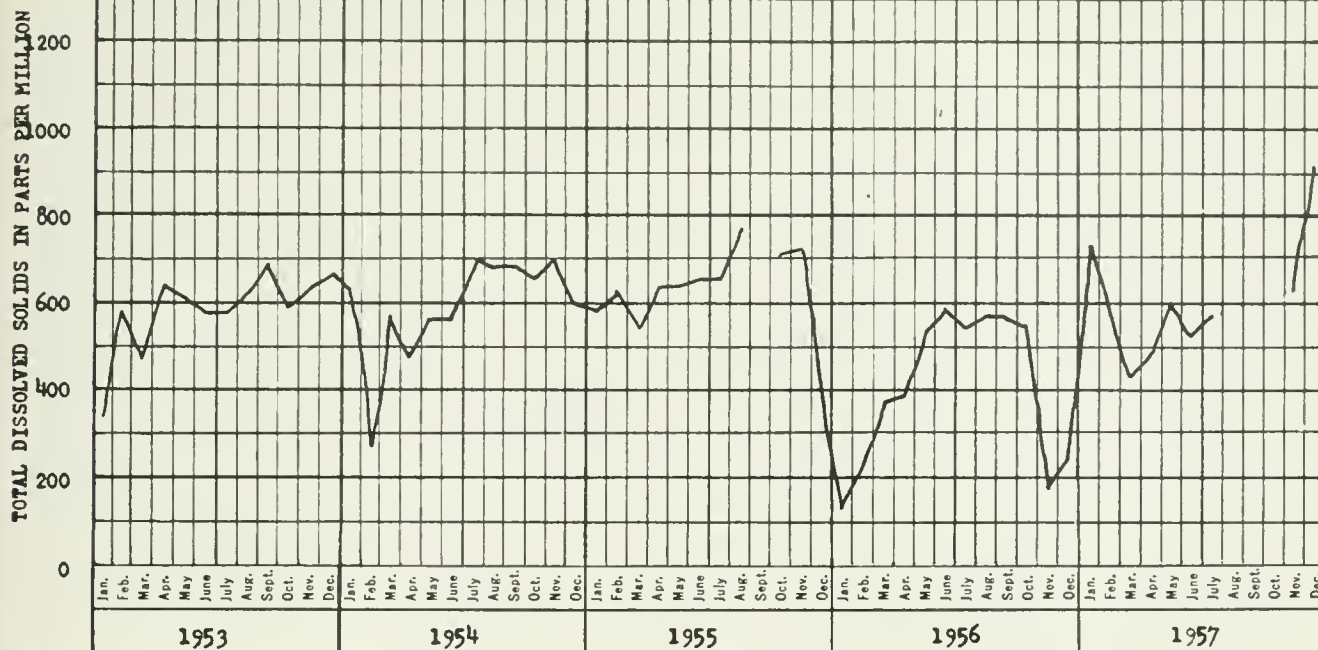
QUALITY CHARACTERISTICS  
OF  
TRINITY RIVER NEAR HOOPA  
(STATION 4)



TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION

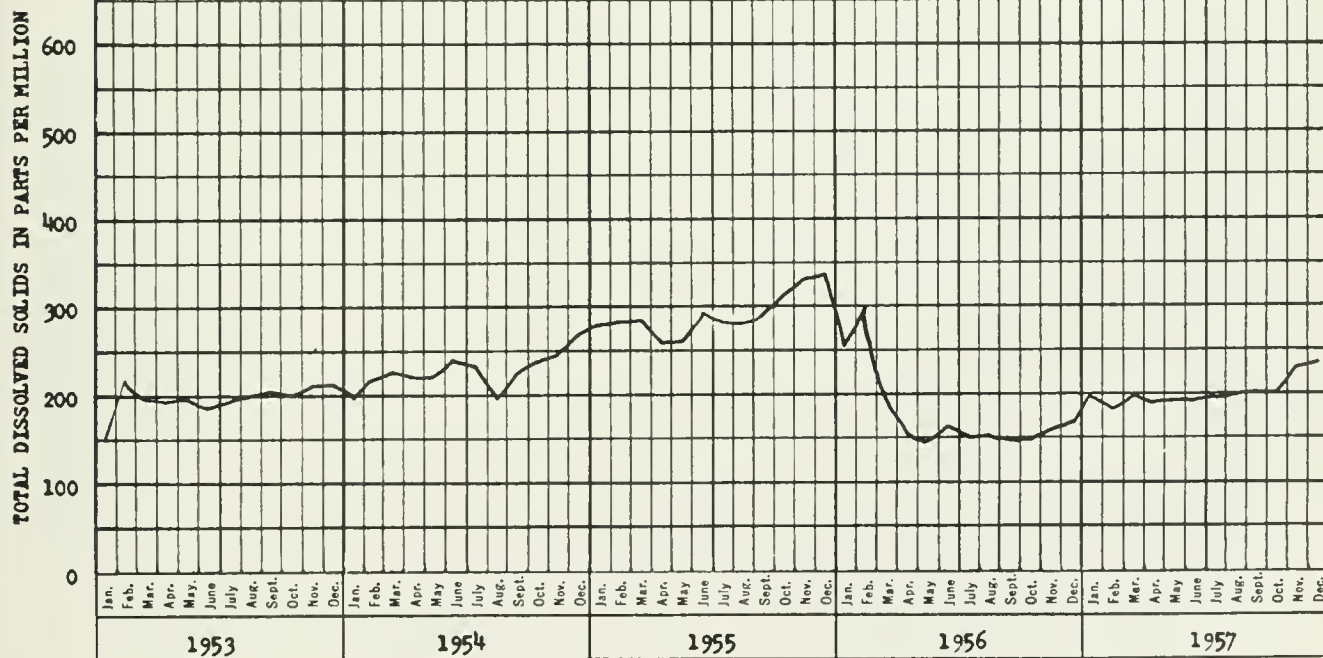


QUALITY CHARACTERISTICS  
OF  
TRINITY RIVER AT LEWISTON  
(STATION 4A)



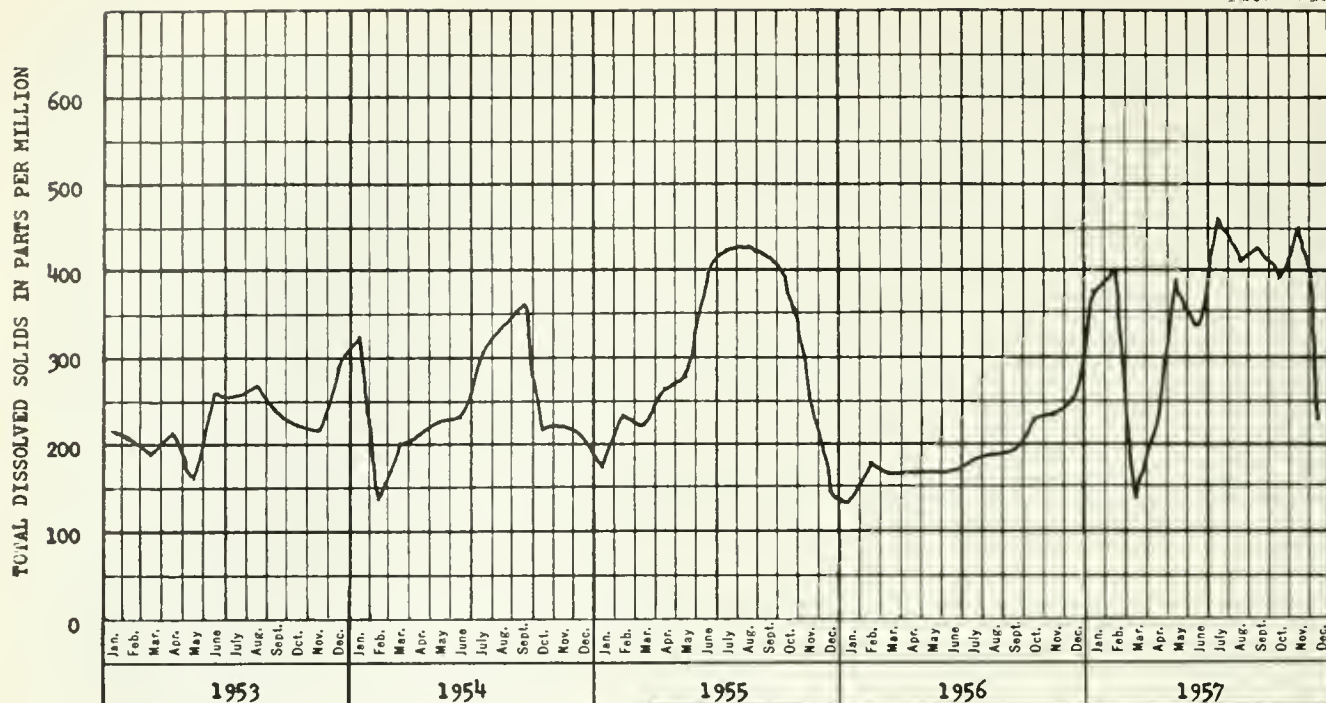
QUALITY CHARACTERISTICS  
OF  
ALAMEDA CREEK NEAR NILES

(STATION 73)

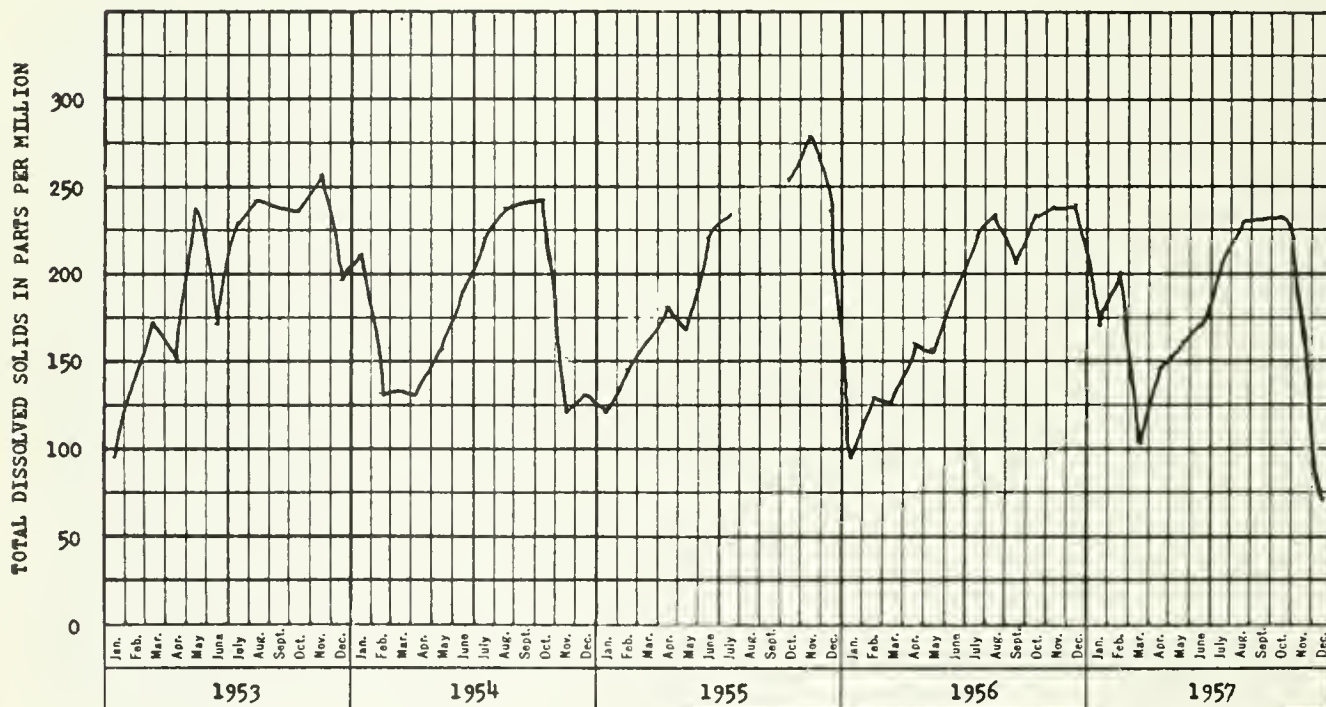


QUALITY CHARACTERISTICS  
OF  
COYOTE CREEK NEAR MADRONE

(STATION 82)

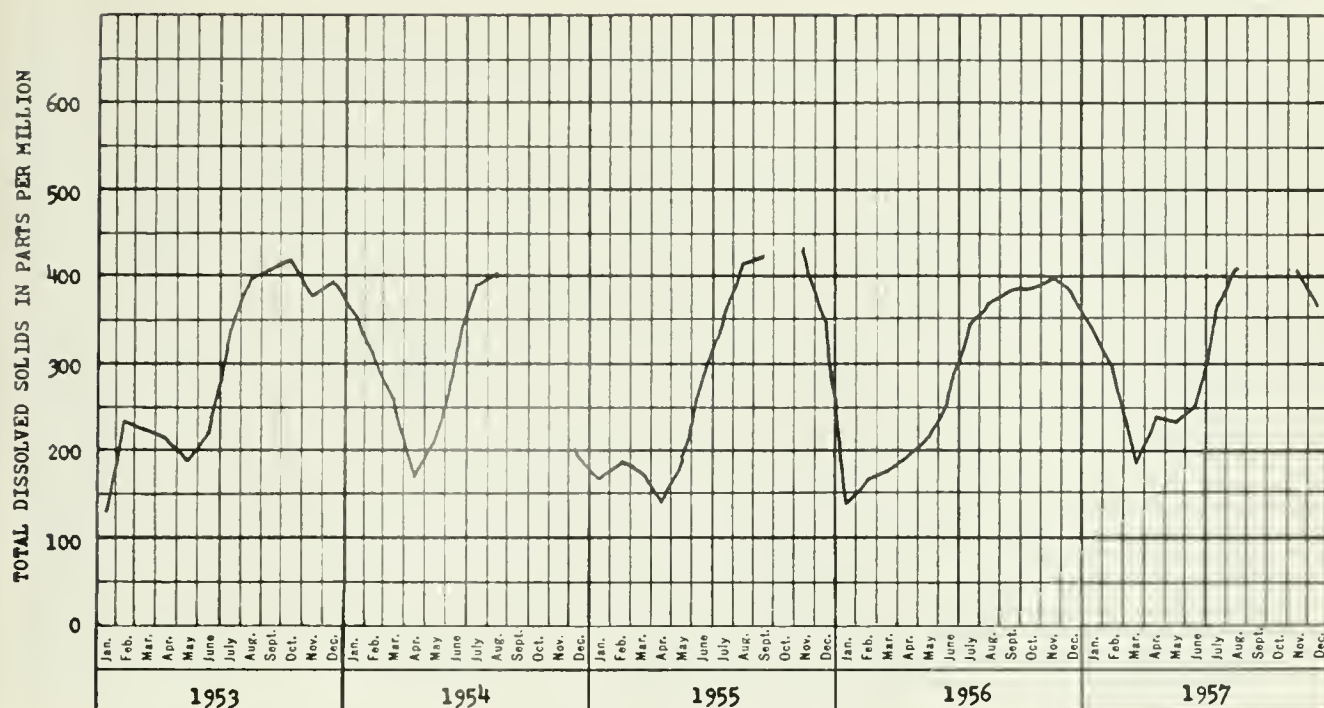


QUALITY CHARACTERISTICS  
OF  
LOS GATOS CREEK AT LOS GATOS  
(STATION 74)

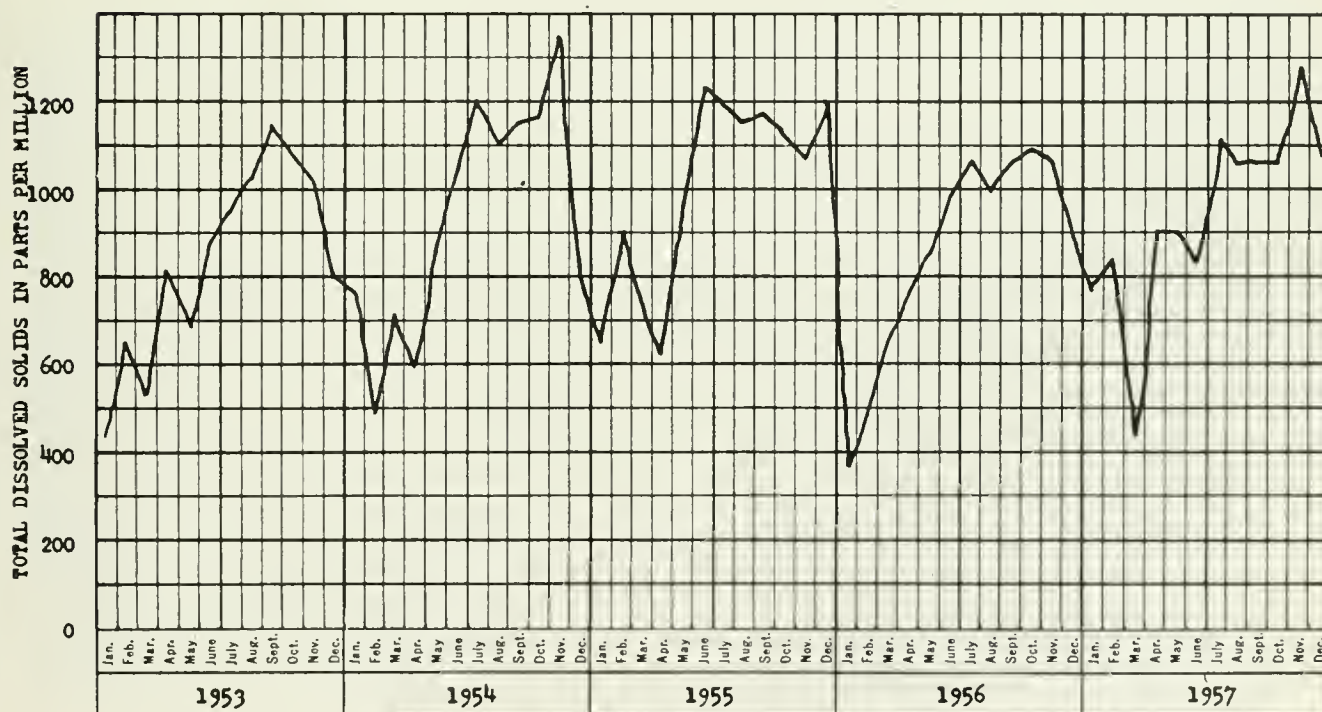


QUALITY CHARACTERISTICS  
OF  
NAPA RIVER NEAR ST. HELENA  
(STATION 72)



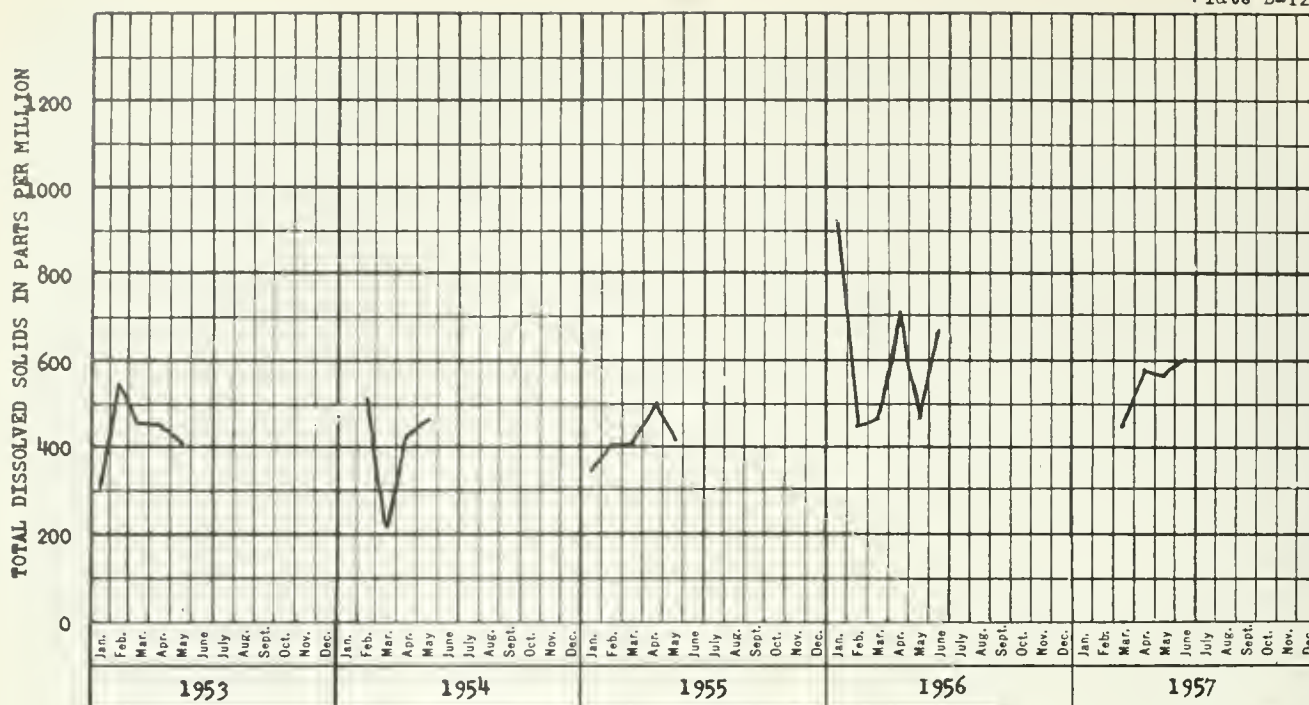


QUALITY CHARACTERISTICS  
OF  
CARMEL RIVER NEAR CARMEL  
(STATION 83)

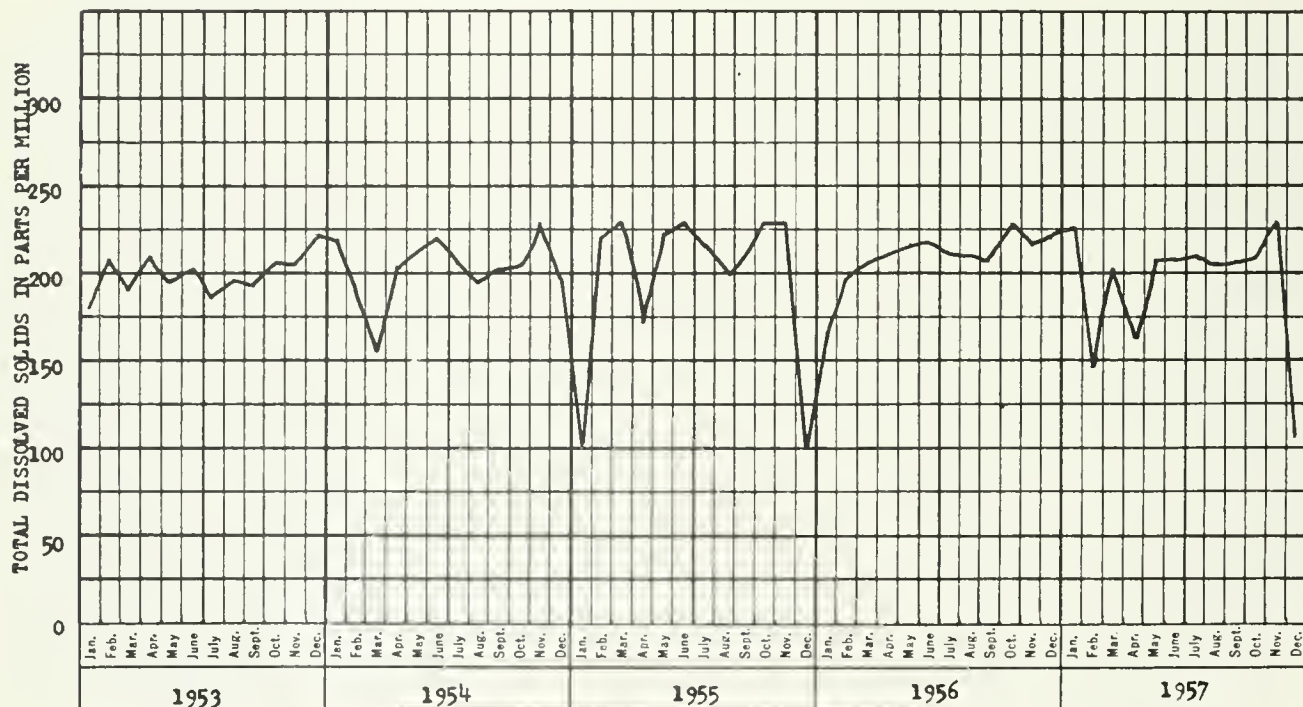


QUALITY CHARACTERISTICS  
OF  
PAJARO RIVER NEAR CHITTENDEN  
(STATION 77)

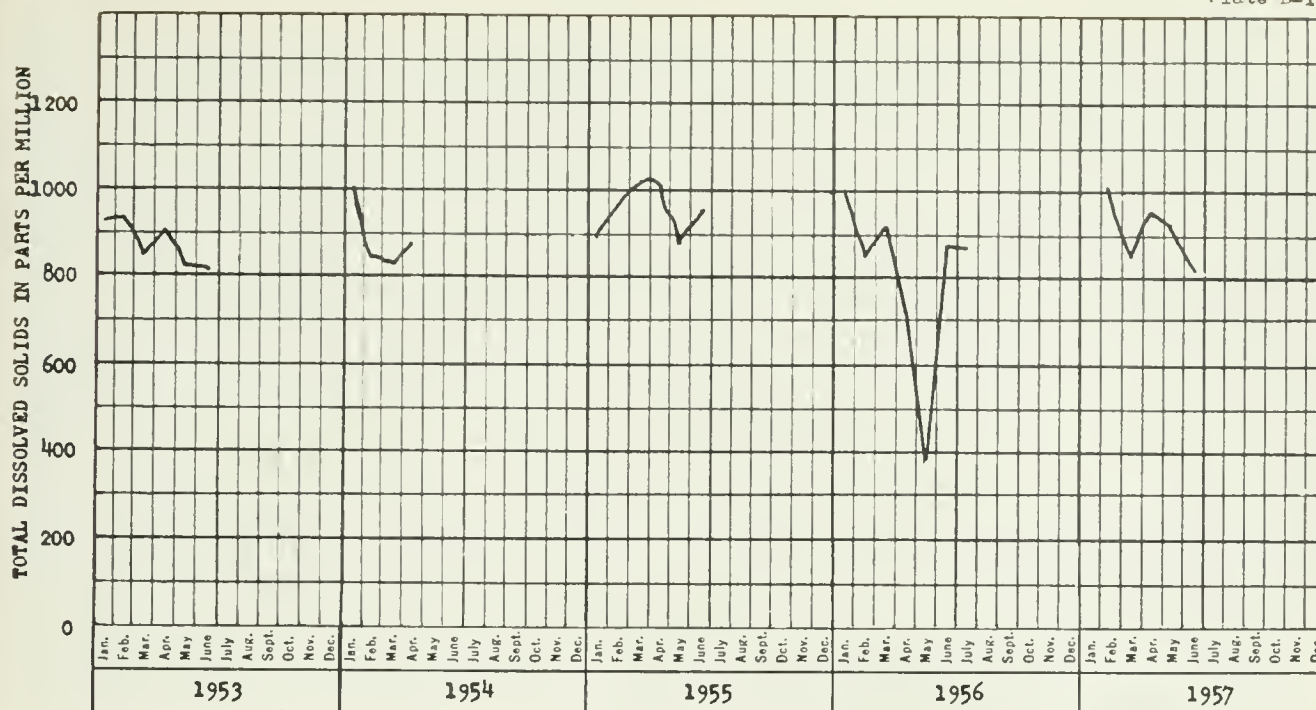




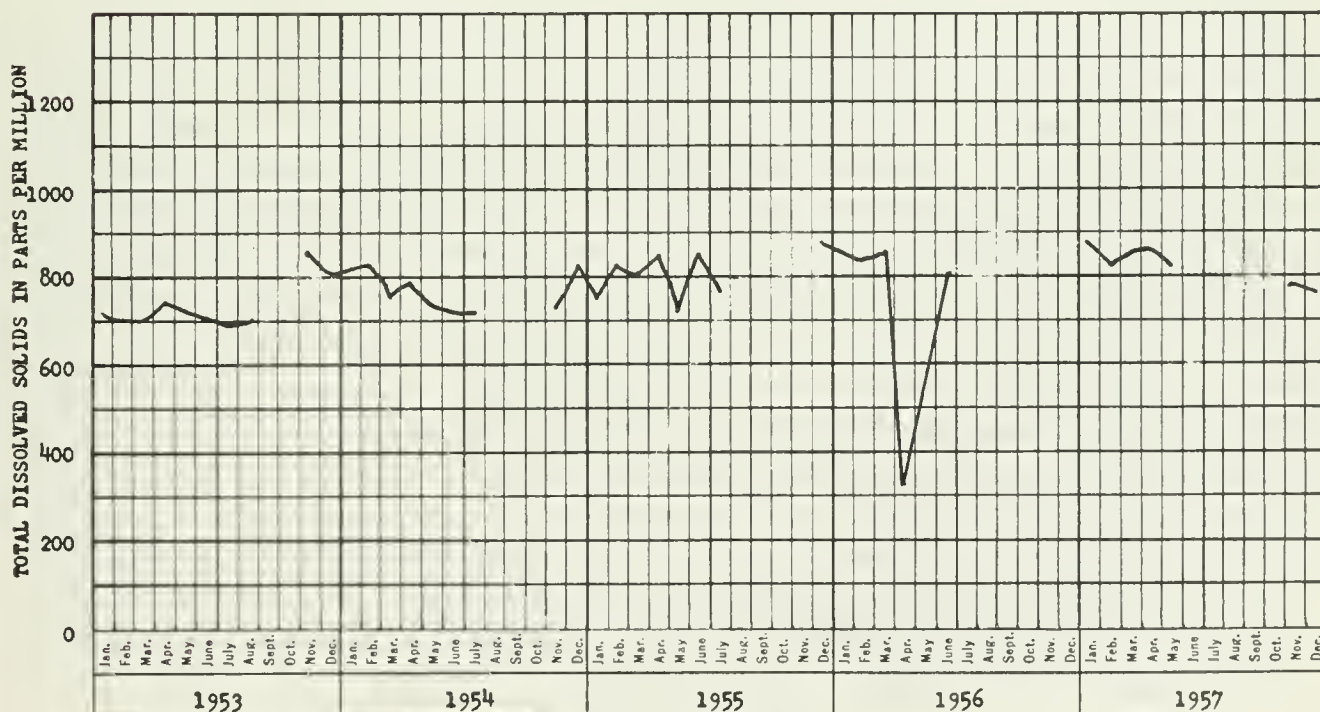
QUALITY CHARACTERISTICS  
OF  
SALINAS RIVER AT PASO ROBLES  
(STATION 43A)



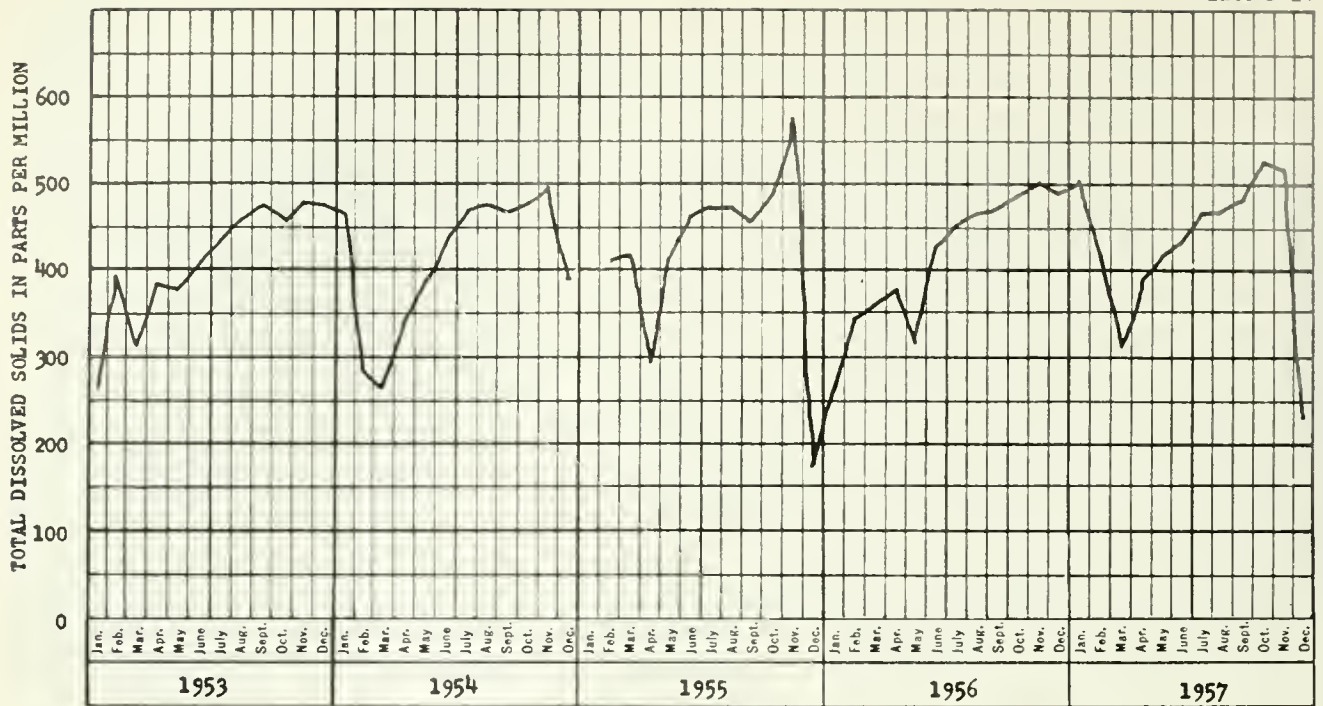
QUALITY CHARACTERISTICS  
OF  
SAN LORENZO RIVER AT BIG TREES  
(STATION 75)



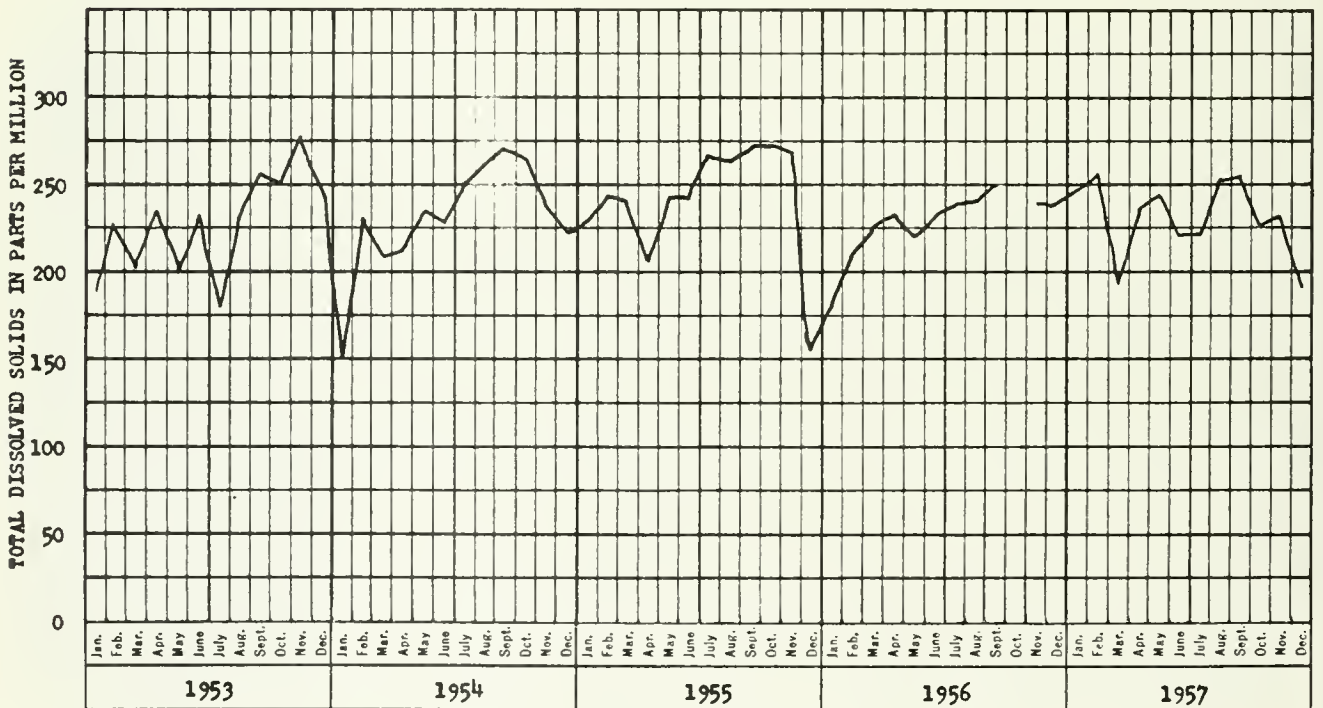
QUALITY CHARACTERISTICS  
OF  
SANTA YNEZ RIVER BELOW LOS LAURELES CANYON  
(STATION 45)



QUALITY CHARACTERISTICS  
OF  
SANTA YNEZ RIVER AT SOLVANG  
(STATION 45A)

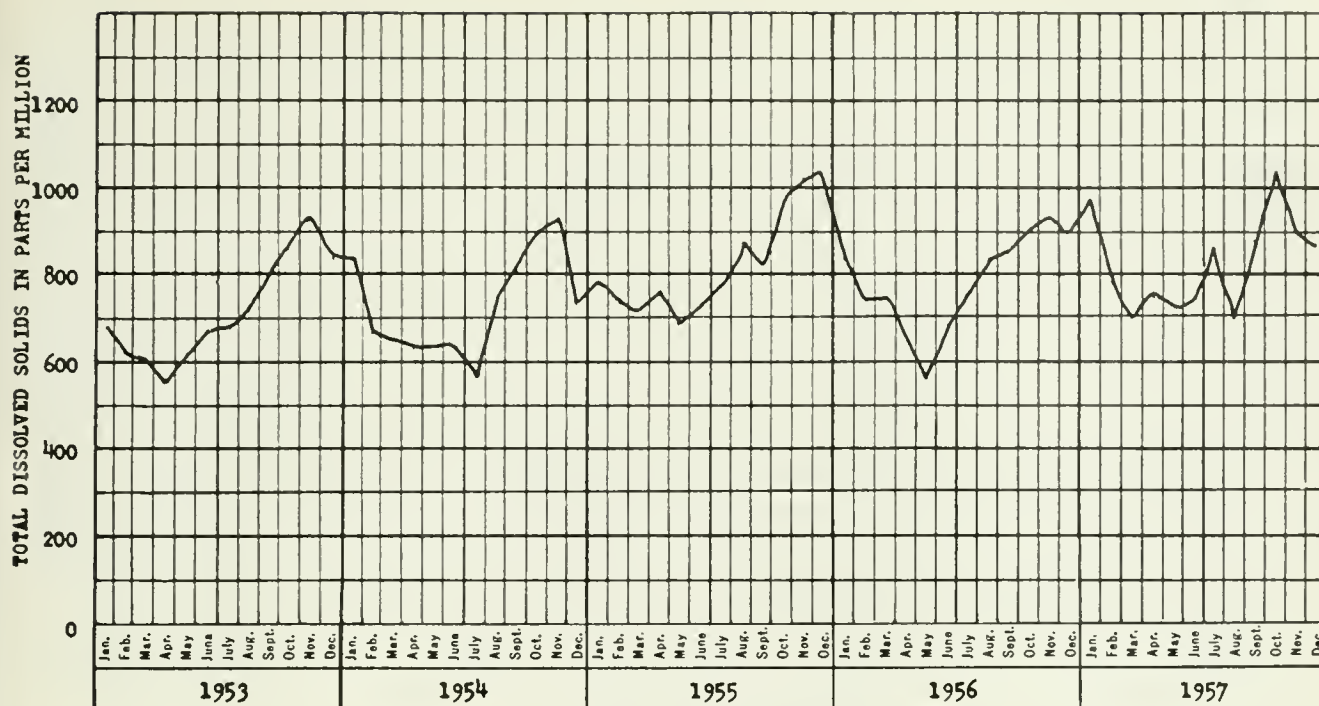


QUALITY CHARACTERISTICS  
OF  
SOQUEL CREEK AT SOQUEL  
(STATION 76)

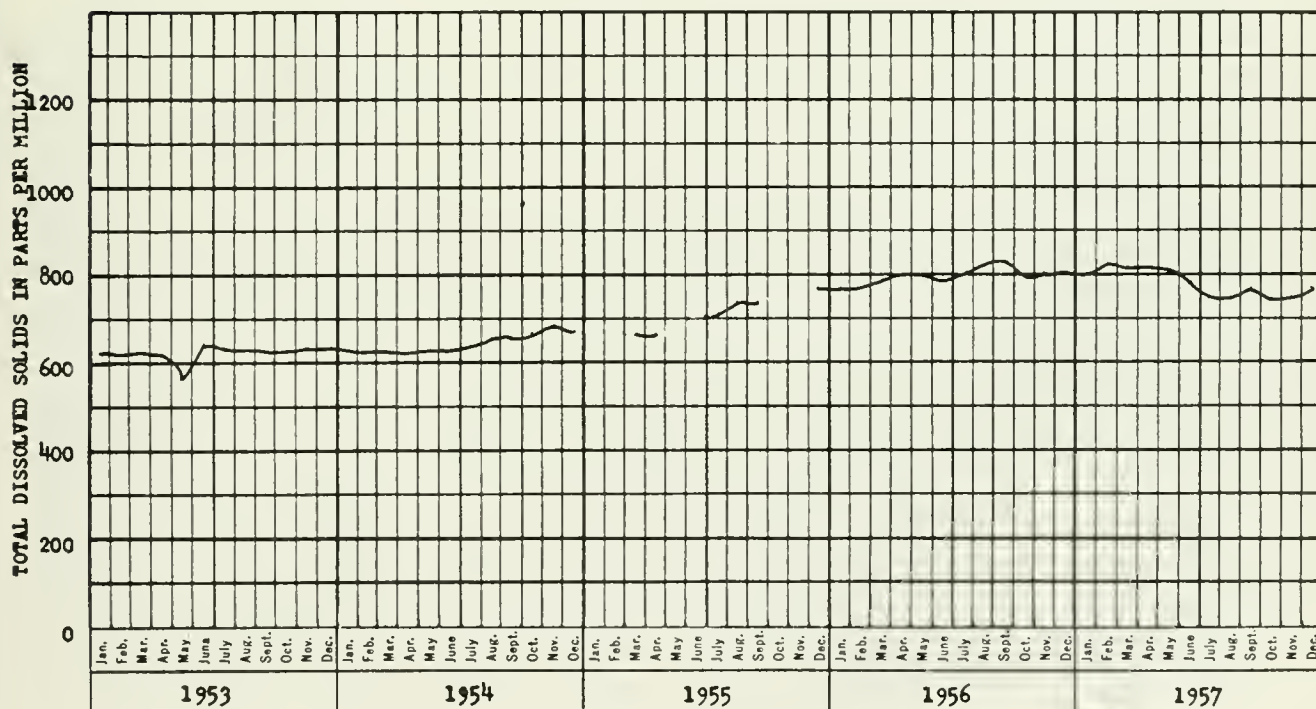


QUALITY CHARACTERISTICS  
OF  
UVAS CREEK NEAR MORGAN HILL  
(STATION 96)



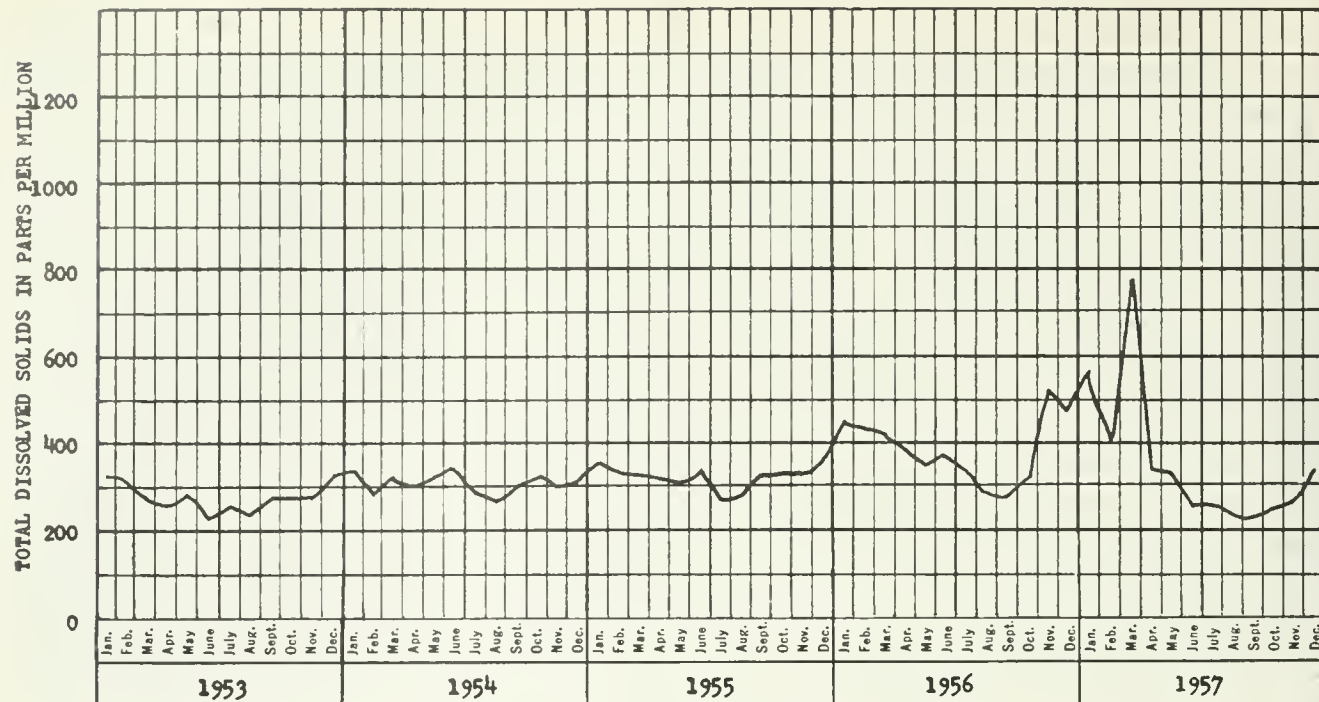


QUALITY CHARACTERISTICS  
OF  
MATILIJA CREEK ABOVE MATILIJA DAM  
(STATION 45B)

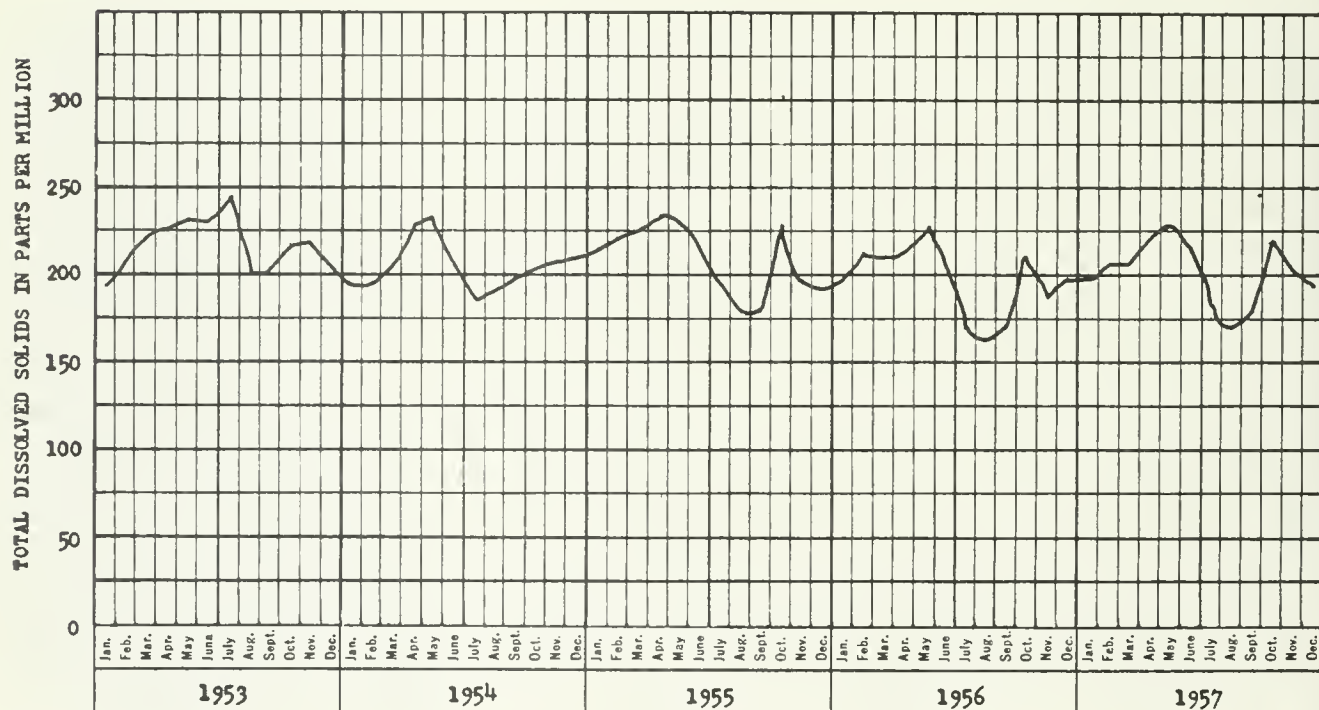


QUALITY CHARACTERISTICS  
OF  
METROPOLITAN WATER DISTRICT AQUEDUCT AT LA VERNE  
(STATION 69)

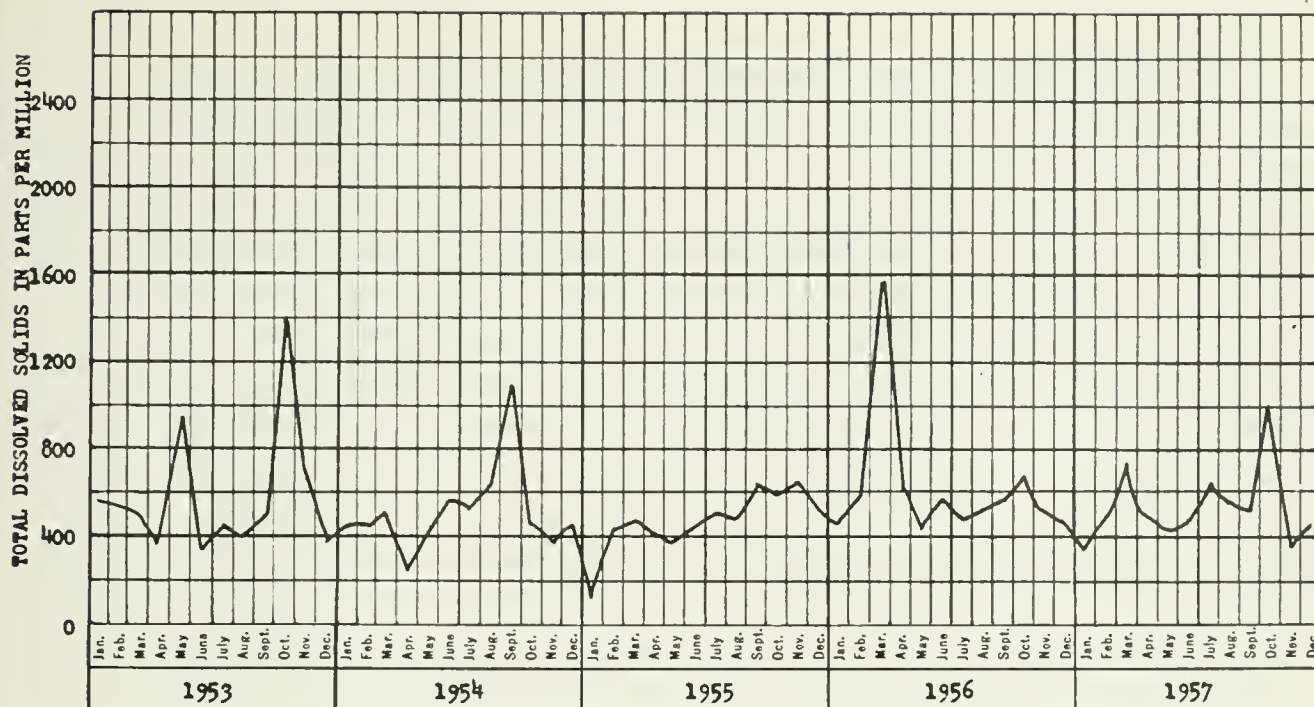




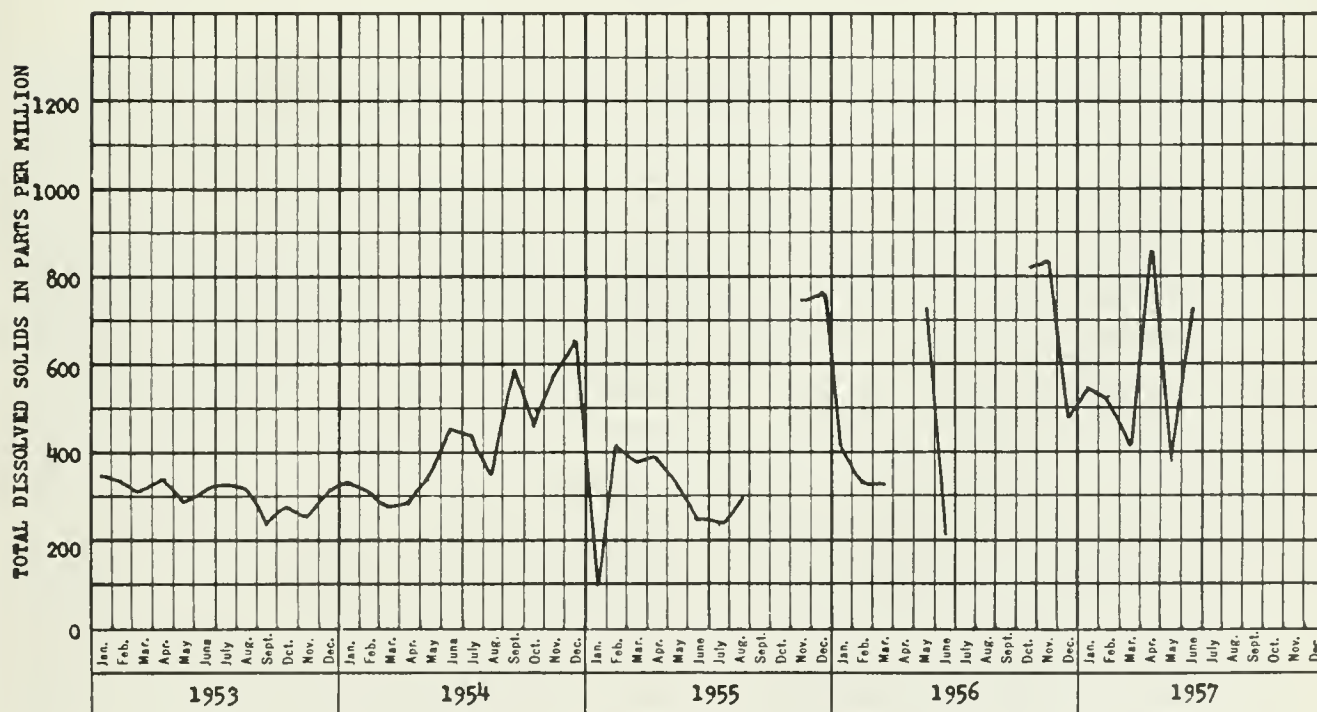
QUALITY CHARACTERISTICS  
OF  
MISSION CREEK AT WHITTIER NARROWS  
(STATION 49A)



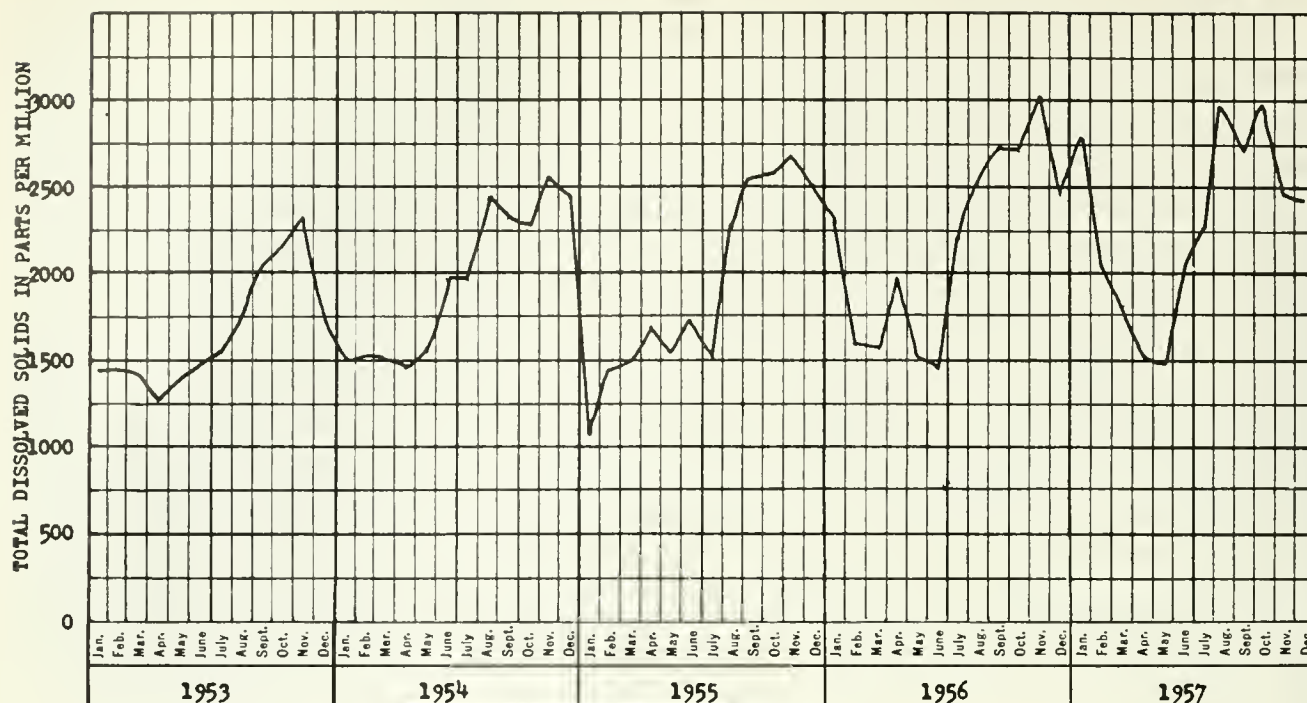
QUALITY CHARACTERISTICS  
OF  
MONO-OWENS AQUEDUCT NEAR SAN FERNANDO  
(STATION 70)



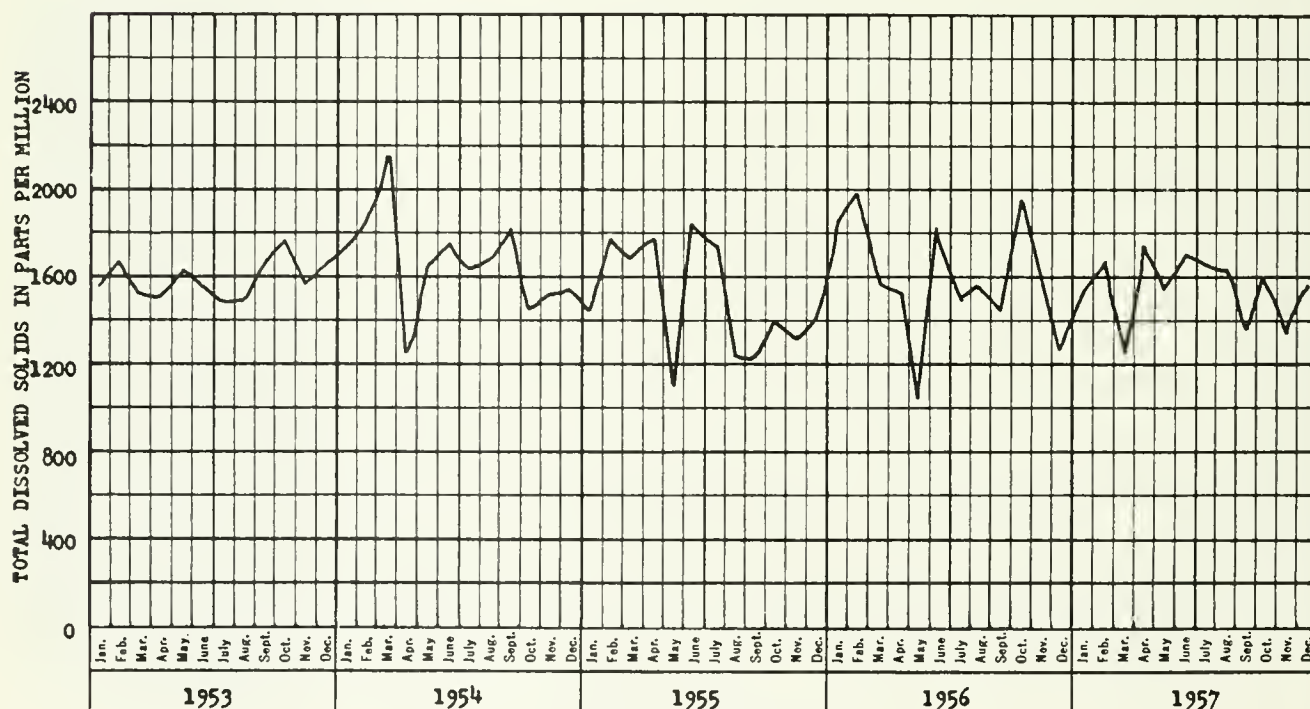
QUALITY CHARACTERISTICS  
OF  
RIO HONDO AT WHITTIER NARROWS  
(STATION 49)



QUALITY CHARACTERISTICS  
OF  
SAN GABRIEL RIVER AT WHITTIER NARROWS  
(STATION 50)

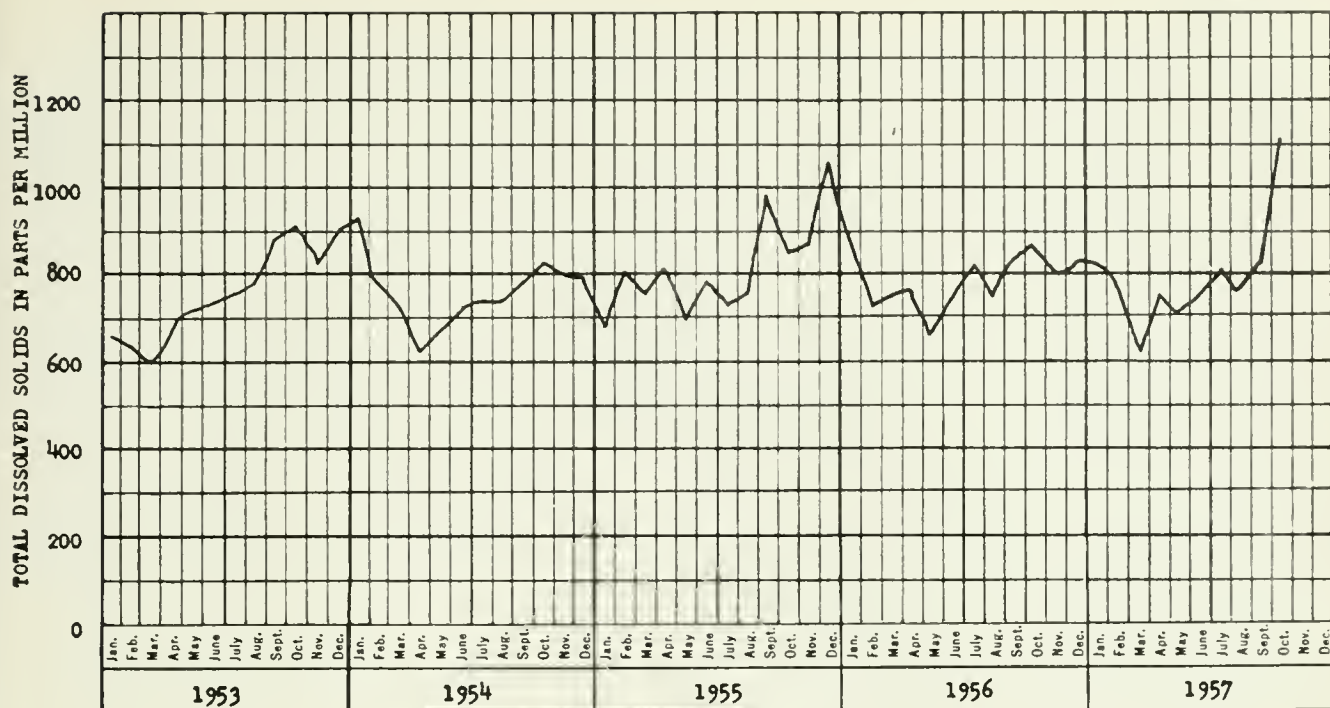


QUALITY CHARACTERISTICS  
OF  
SANTA CLARA RIVER AT LOS ANGELES-VENTURA COUNTY LINE  
(STATION 46)



QUALITY CHARACTERISTICS  
OF  
SANTA CLARA RIVER NEAR SANTA PAULA  
(STATION 46A)

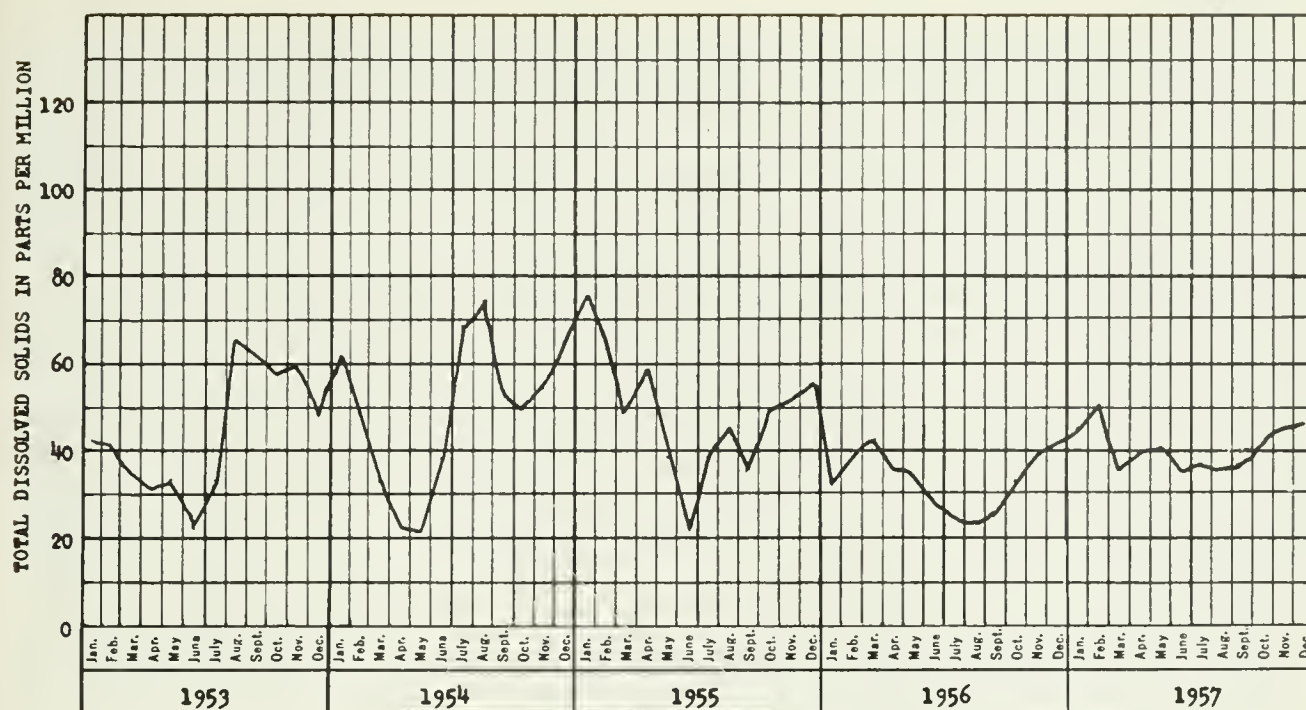




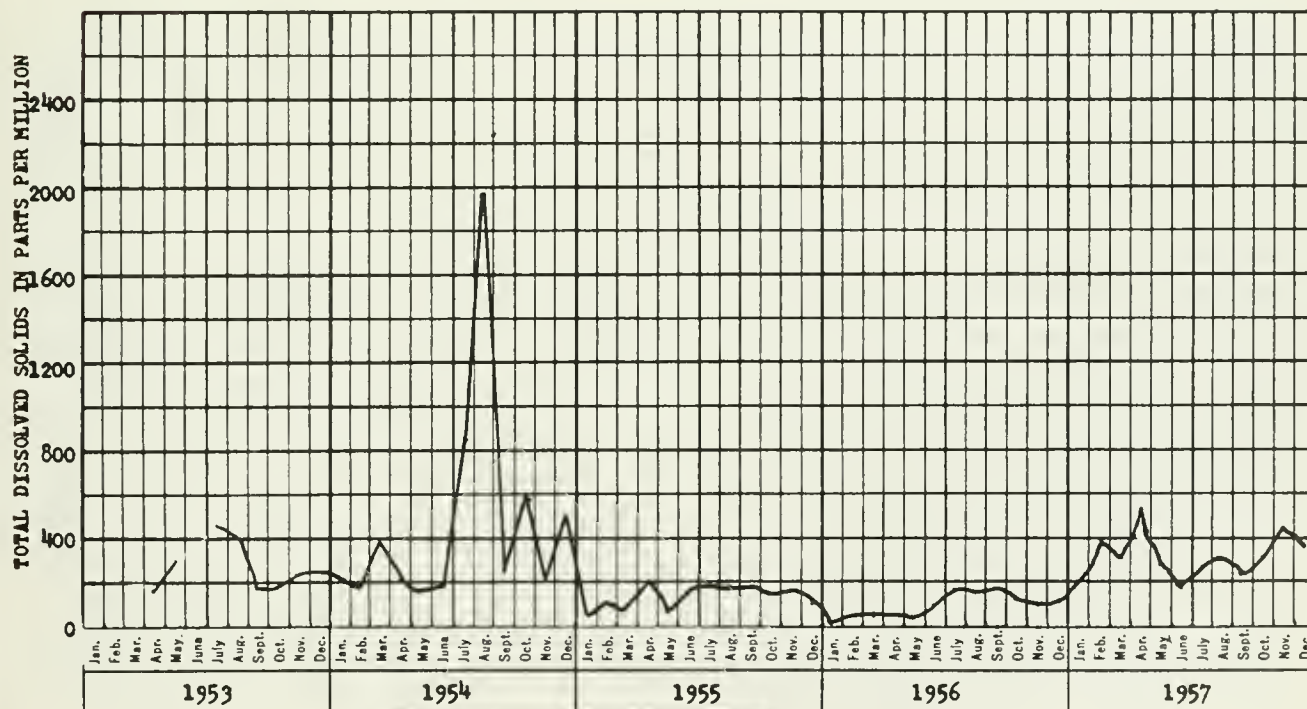
QUALITY CHARACTERISTICS  
OF  
VENTURA RIVER NEAR VENTURA  
(STATION 61)



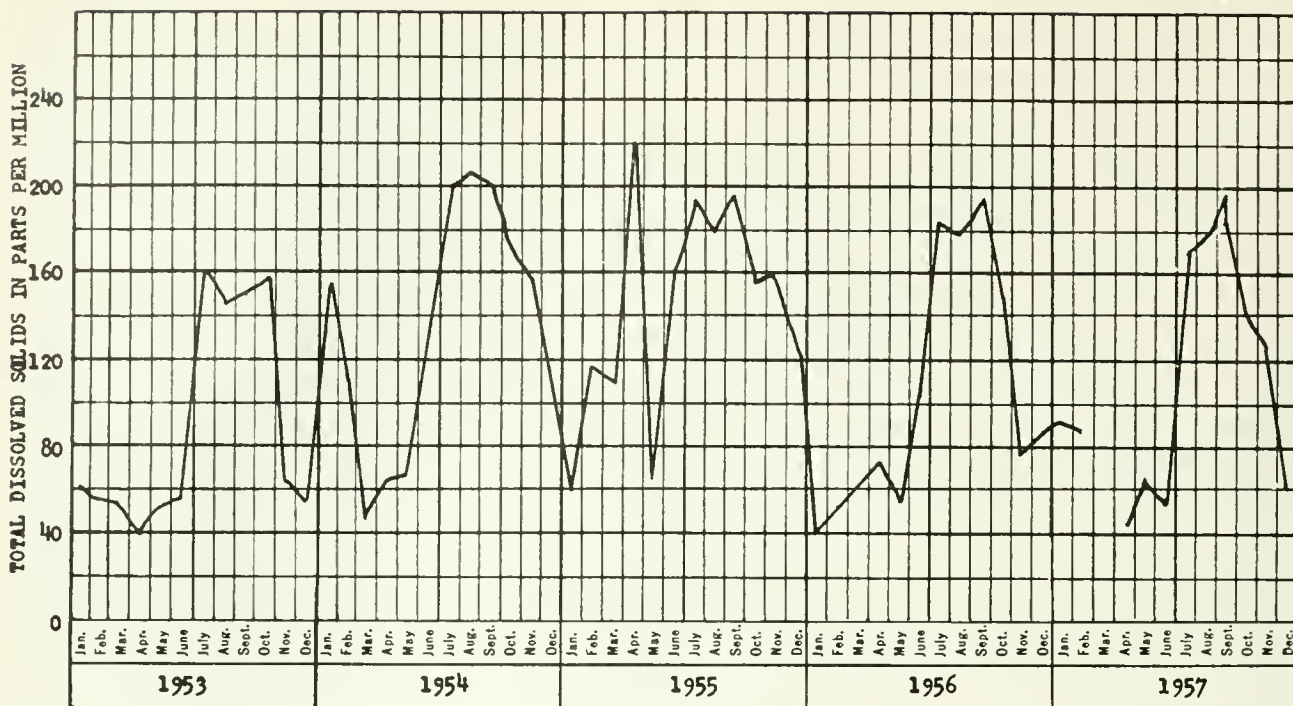




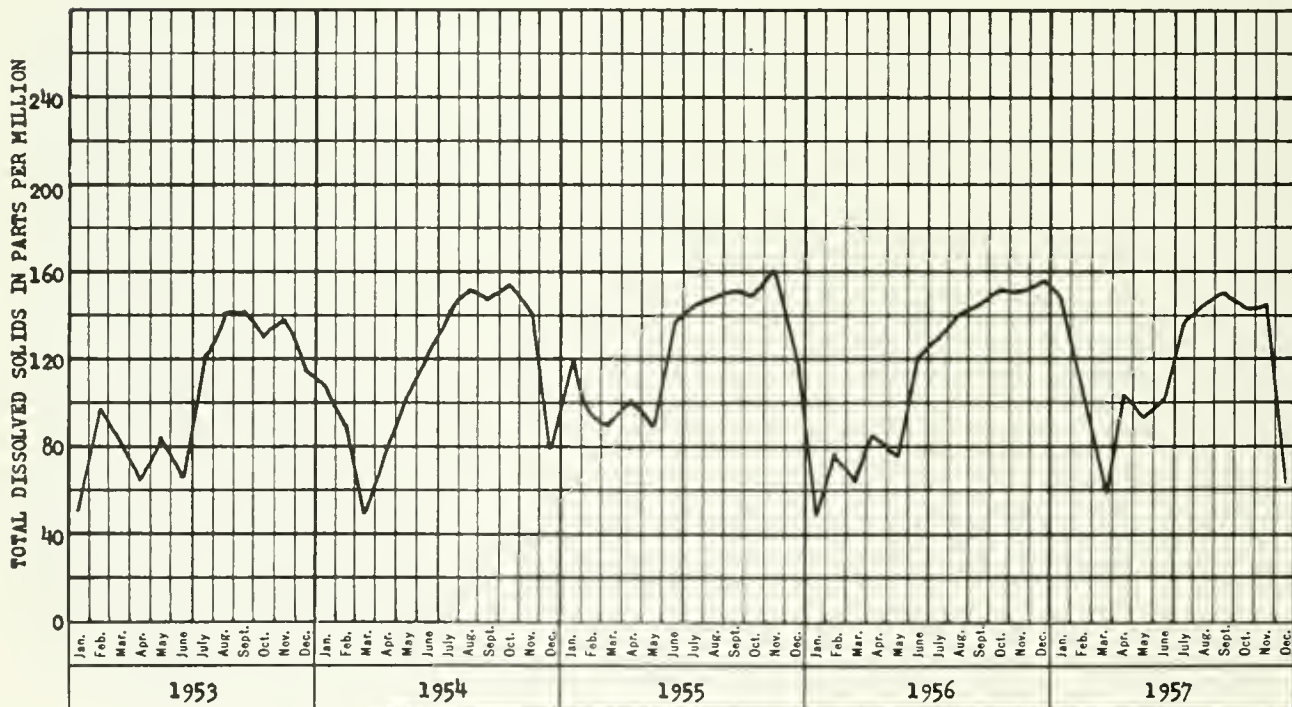
QUALITY CHARACTERISTICS  
OF  
AMERICAN RIVER AT SACRAMENTO  
(STATION 22)



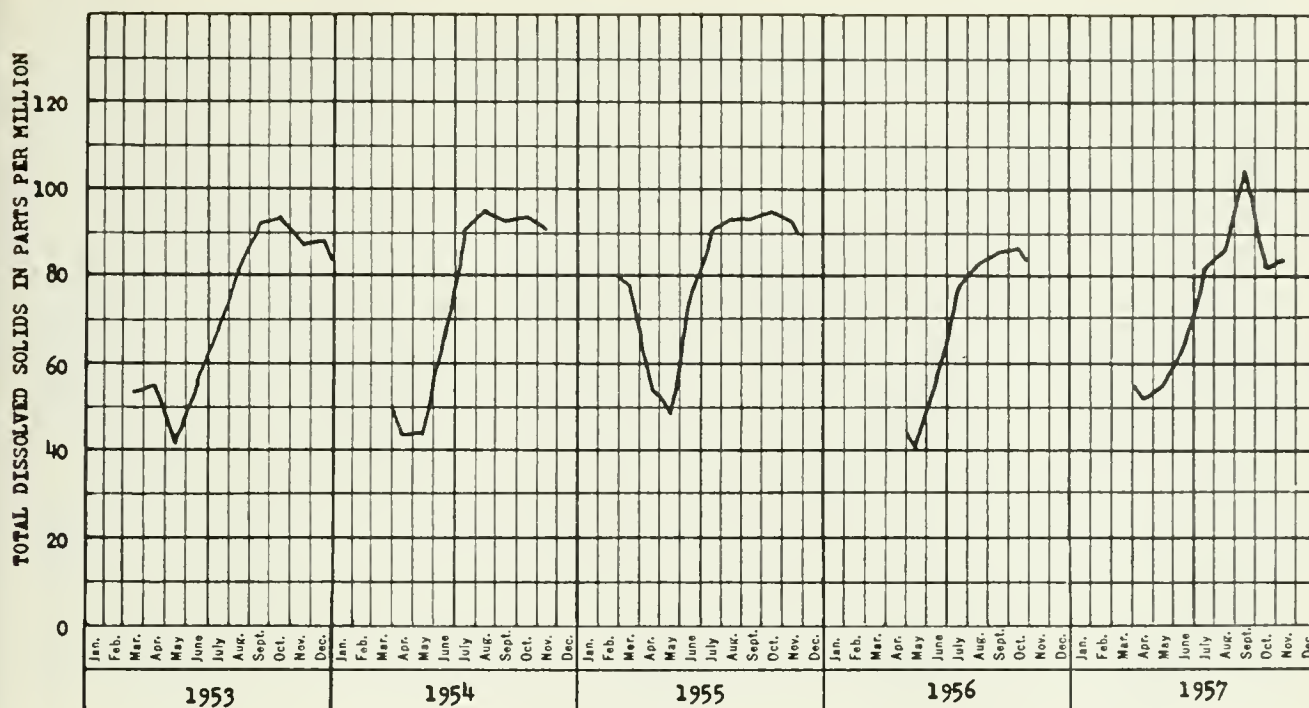
QUALITY CHARACTERISTICS  
OF  
BEAR CREEK NEAR STEVINSON  
(STATION 111)



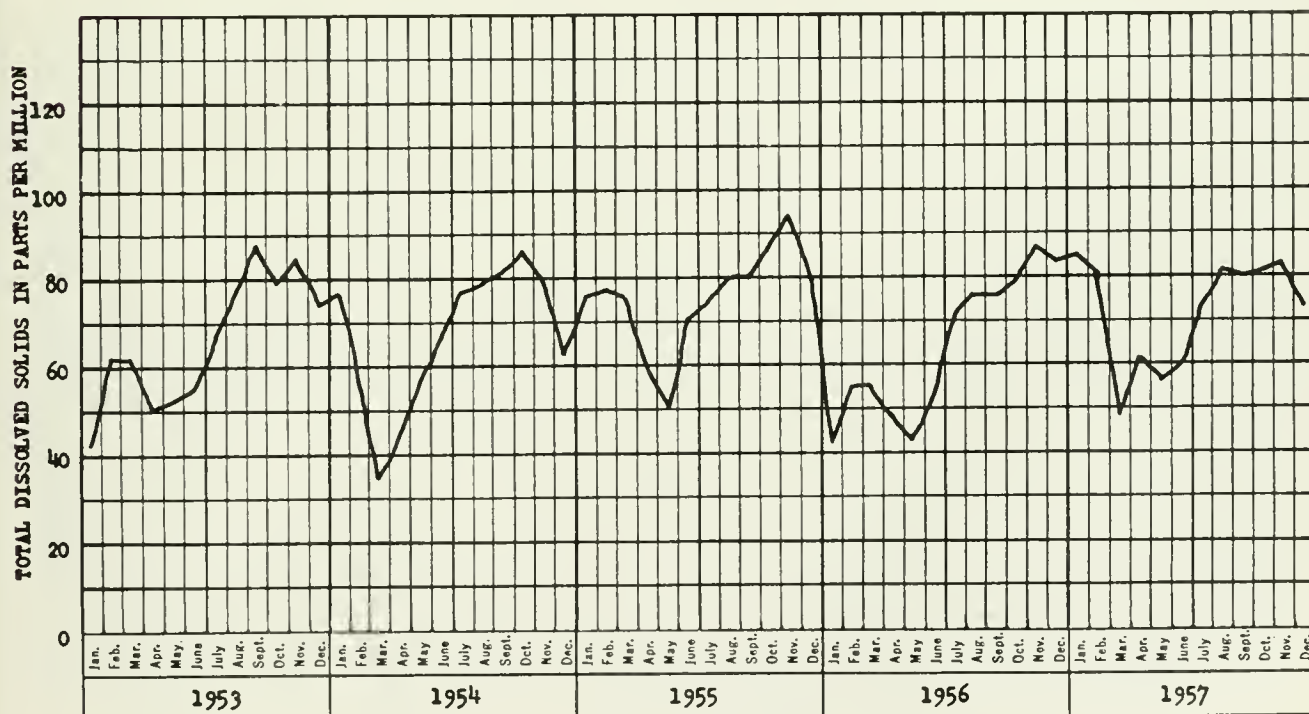
QUALITY CHARACTERISTICS  
OF  
BEAR RIVER NEAR WHEATLAND  
(STATION 78)



QUALITY CHARACTERISTICS  
OF  
BIG CHICO CREEK NEAR CHICO  
(STATION 85)

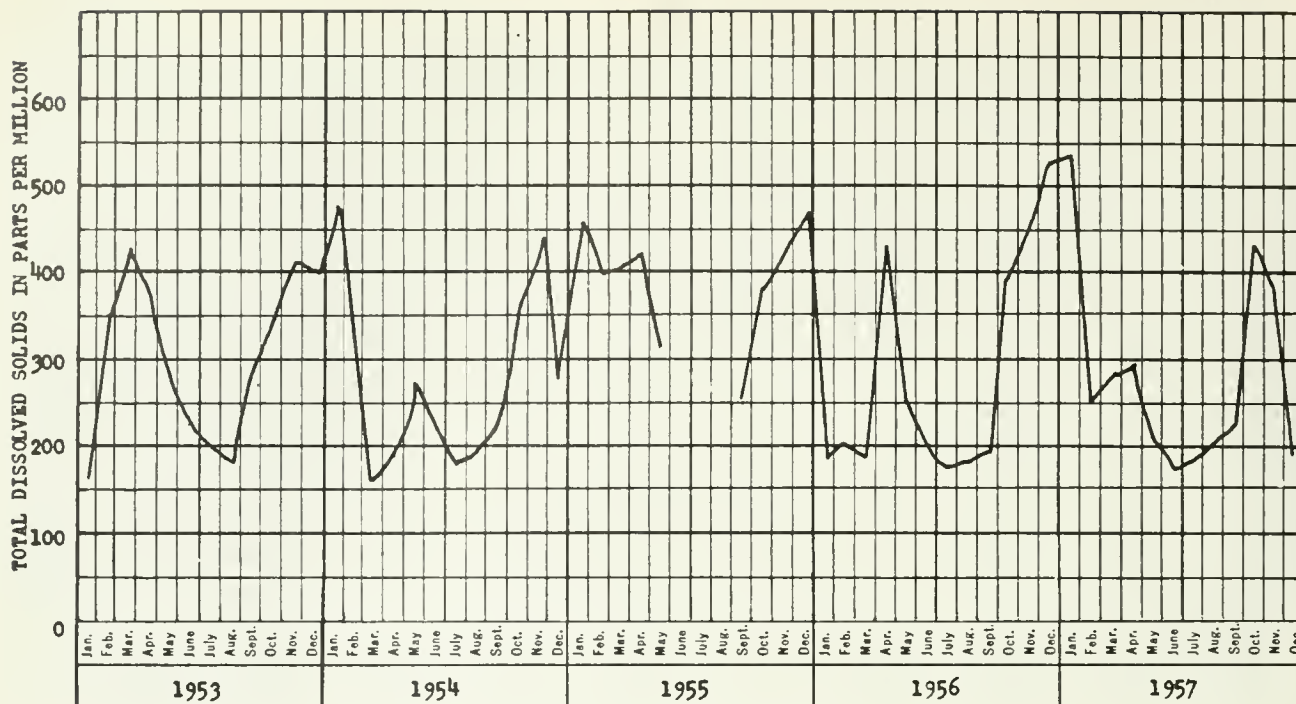


QUALITY CHARACTERISTICS  
OF  
BURNLEY CREEK NEAR BURNLEY  
(STATION 17C)

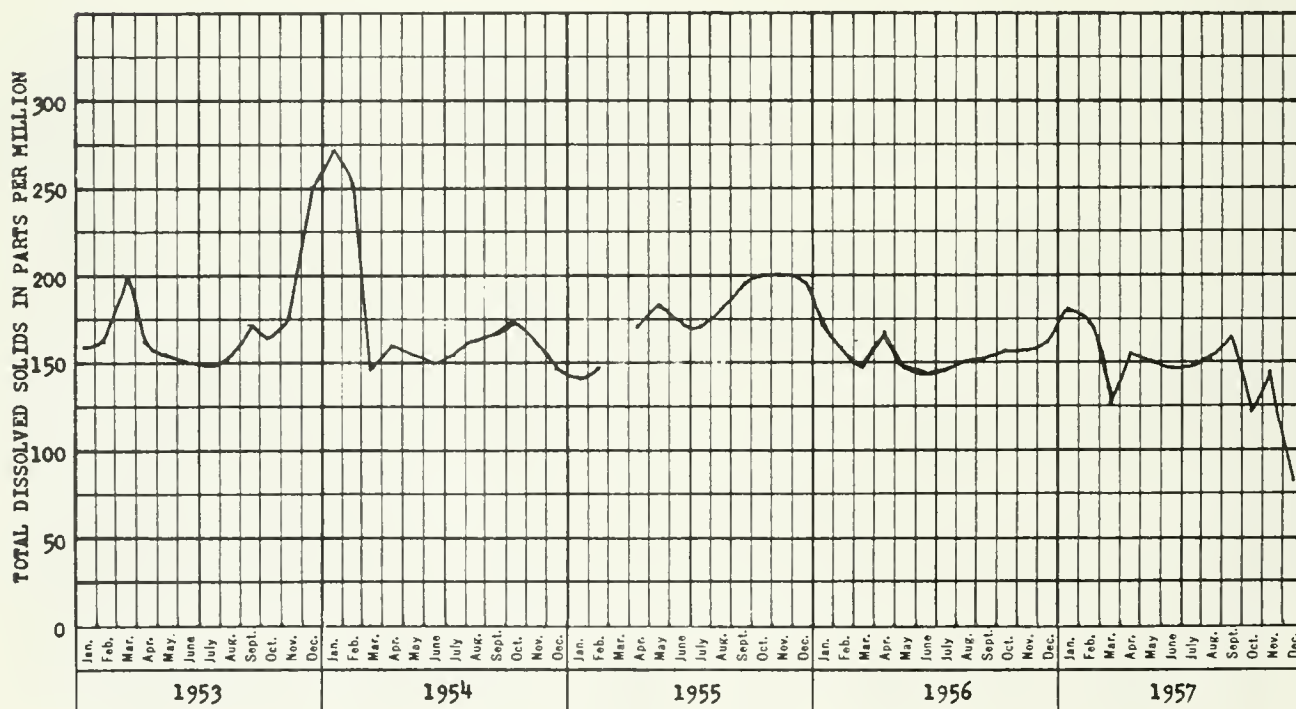


QUALITY CHARACTERISTICS  
OF  
BUTTE CREEK NEAR CHICO  
(STATION 84)

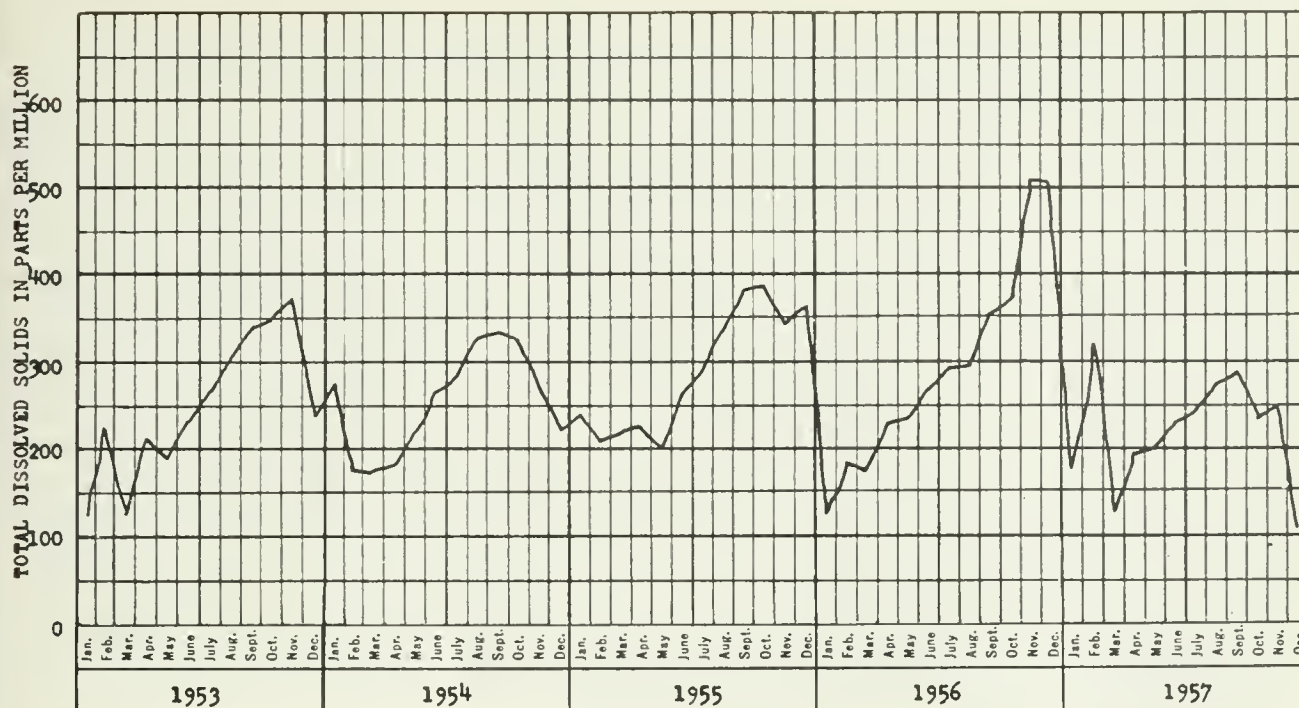




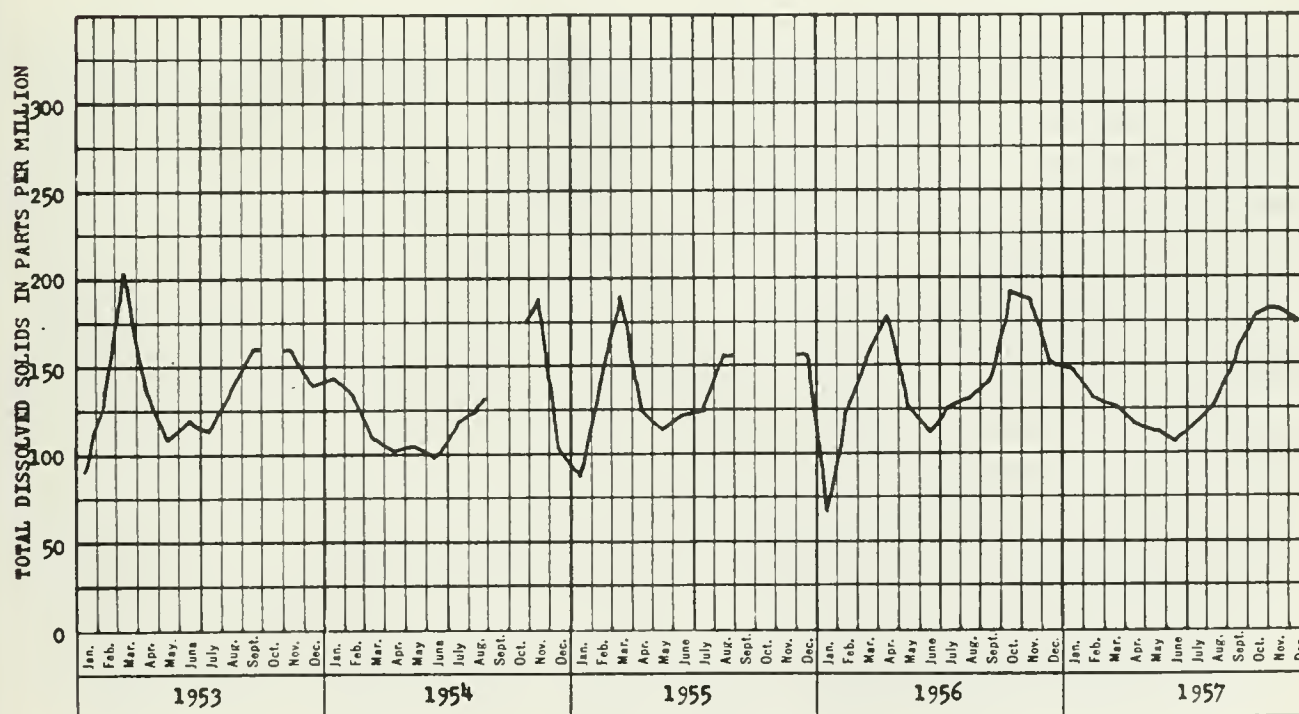
QUALITY CHARACTERISTICS  
OF  
CACHE CREEK NEAR CAPAY  
(STATION 80)



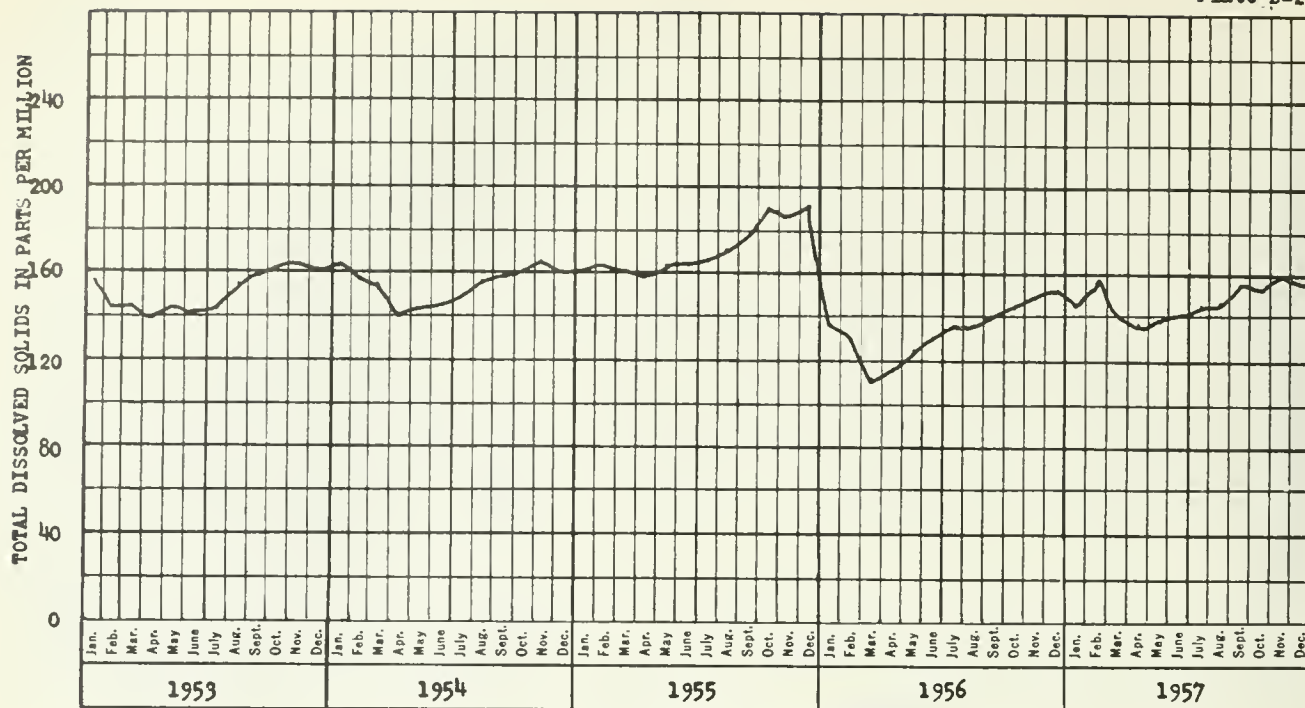
QUALITY CHARACTERISTICS  
OF  
CACHE CREEK NEAR LOWER LAKE  
(STATION 42)



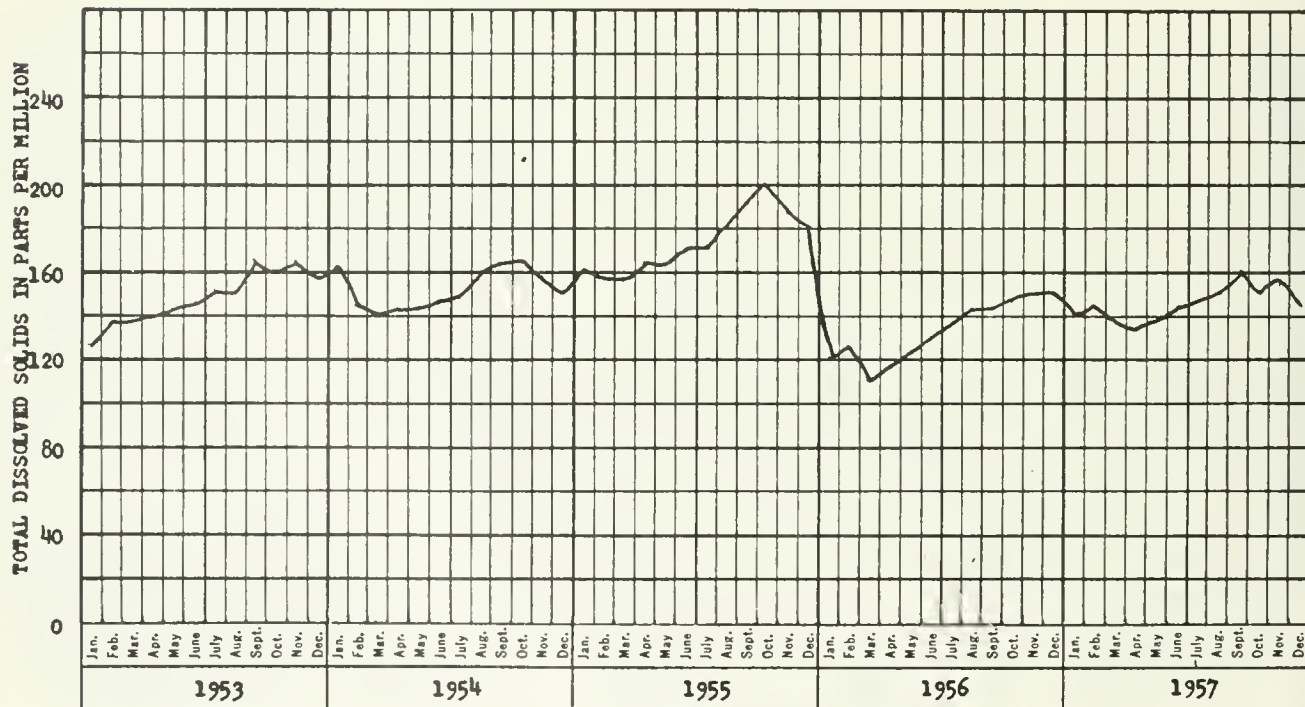
QUALITY CHARACTERISTICS  
OF  
CACHE CREEK, NORTH FORK, NEAR LOWER LAKE  
(STATION 79)



QUALITY CHARACTERISTICS  
OF  
CALAVERAS RIVER NEAR JENNY LIND  
(STATION 16A)



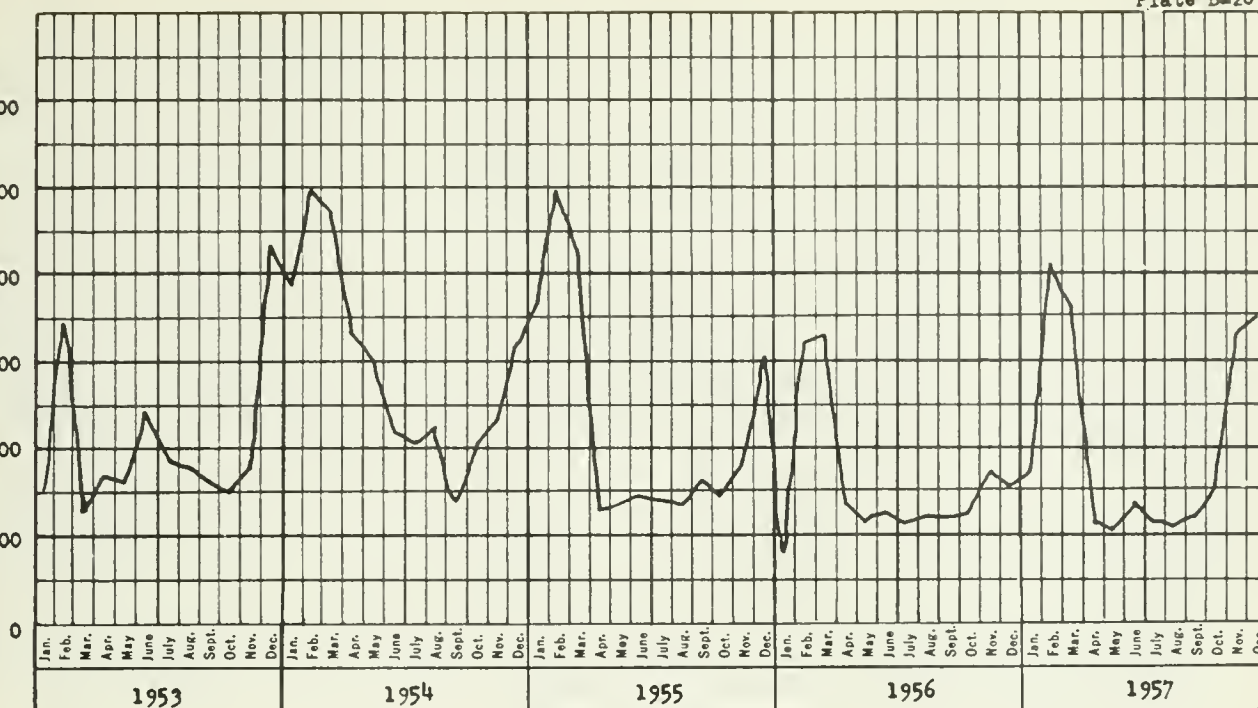
QUALITY CHARACTERISTICS  
OF  
CLEAR LAKE NEAR CLEARLAKE OAKS  
(STATION 40)



QUALITY CHARACTERISTICS  
OF  
CLEAR LAKE AT LAKEPORT  
(STATION 41)

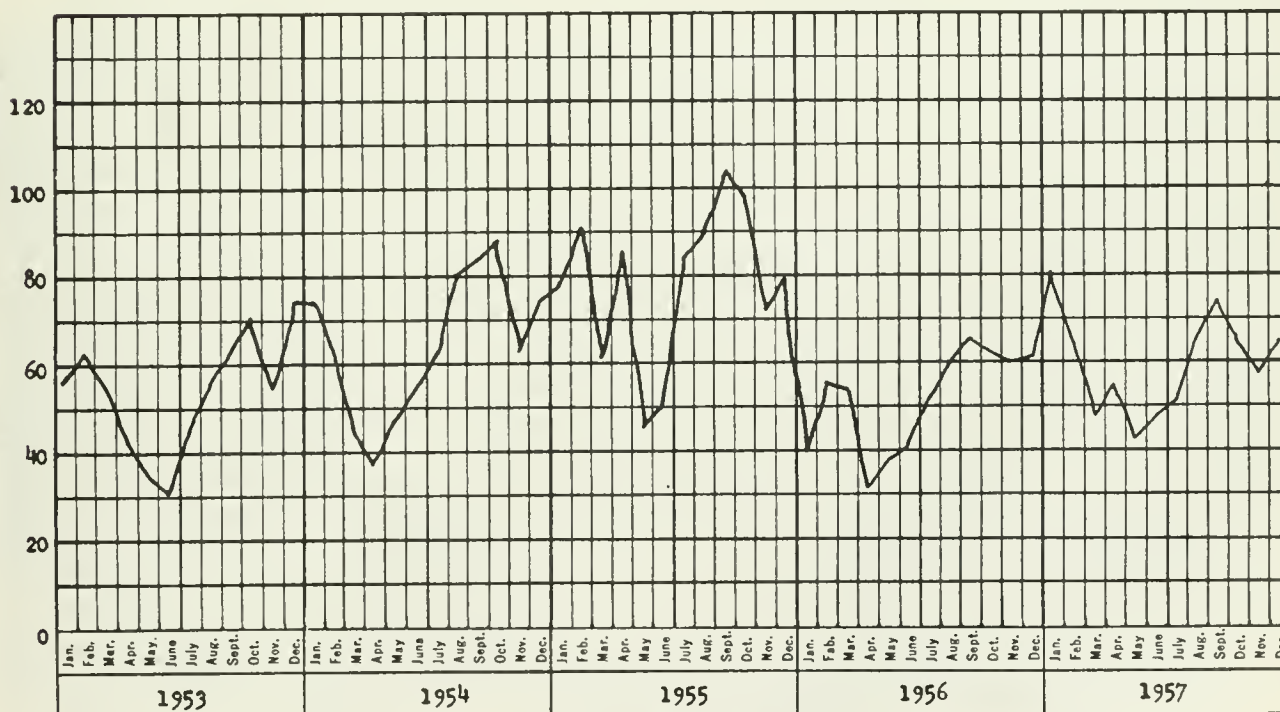


TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



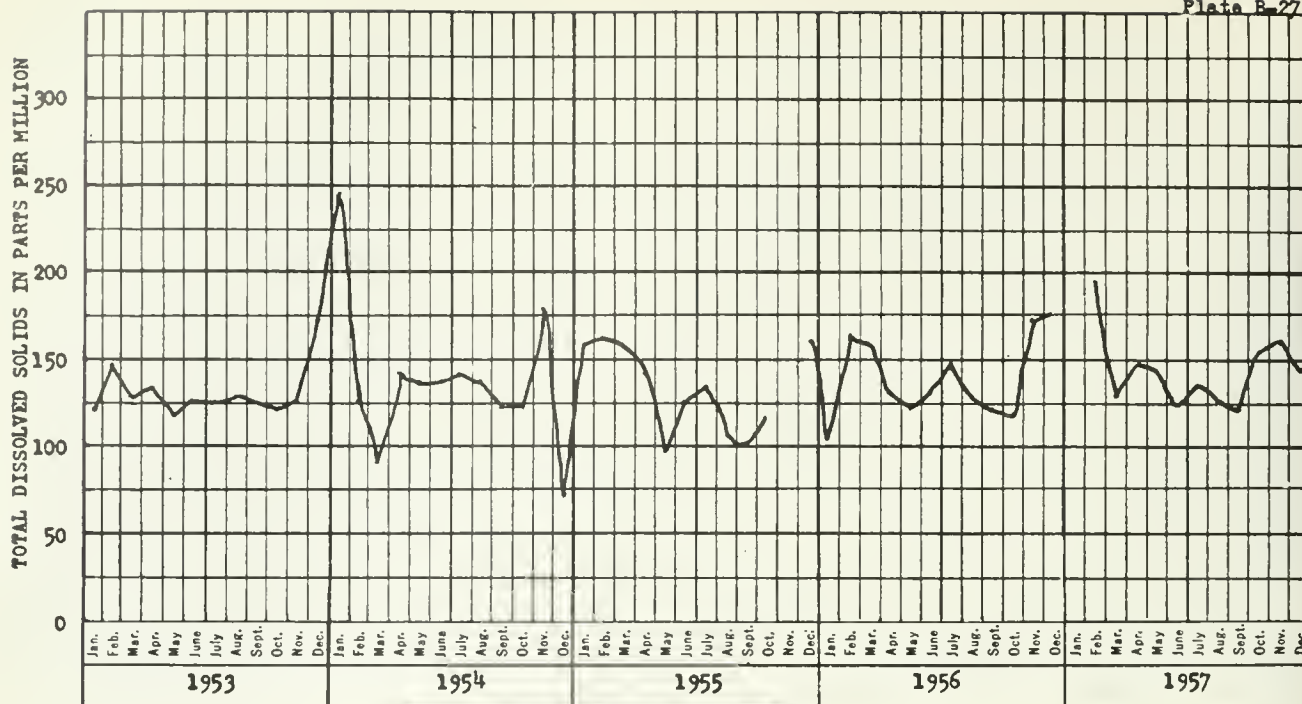
QUALITY CHARACTERISTICS  
OF  
COLUSA TROUGH NEAR COLUSA  
(STATION 87)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION

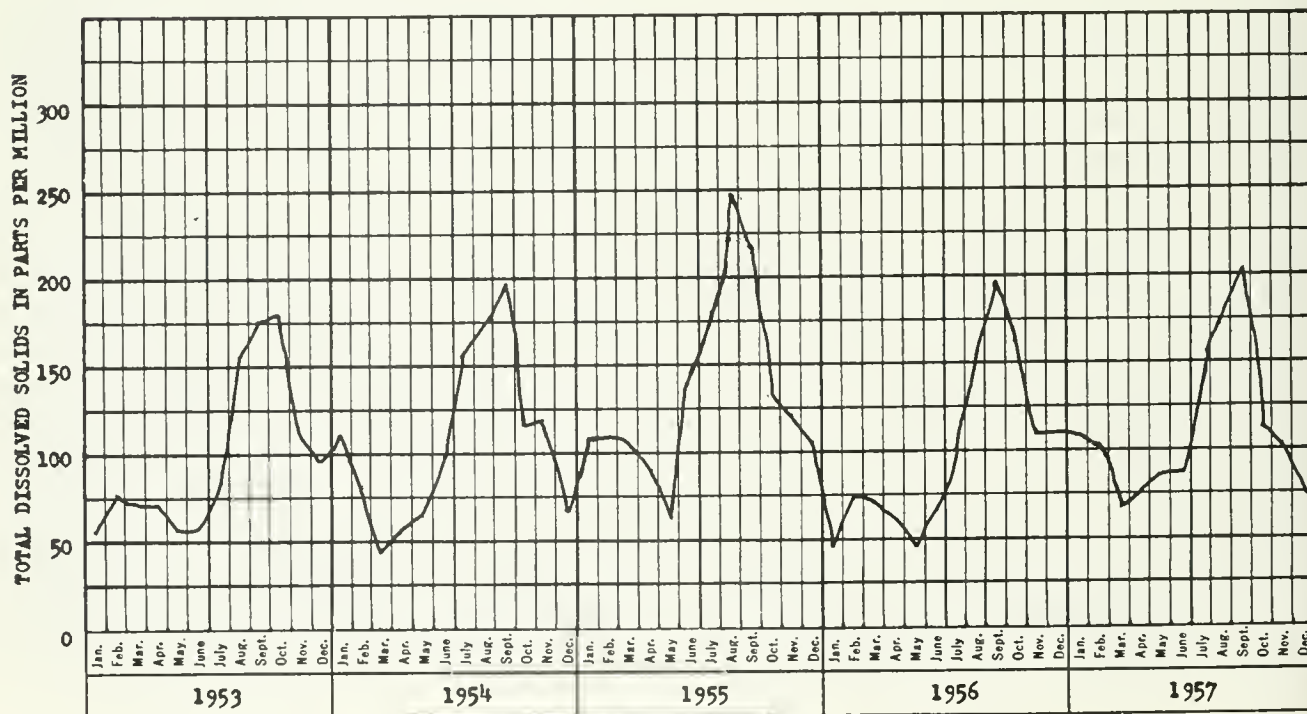


QUALITY CHARACTERISTICS  
OF  
COSUMNES RIVER NEAR MICHIGAN BAR  
(STATION 94)

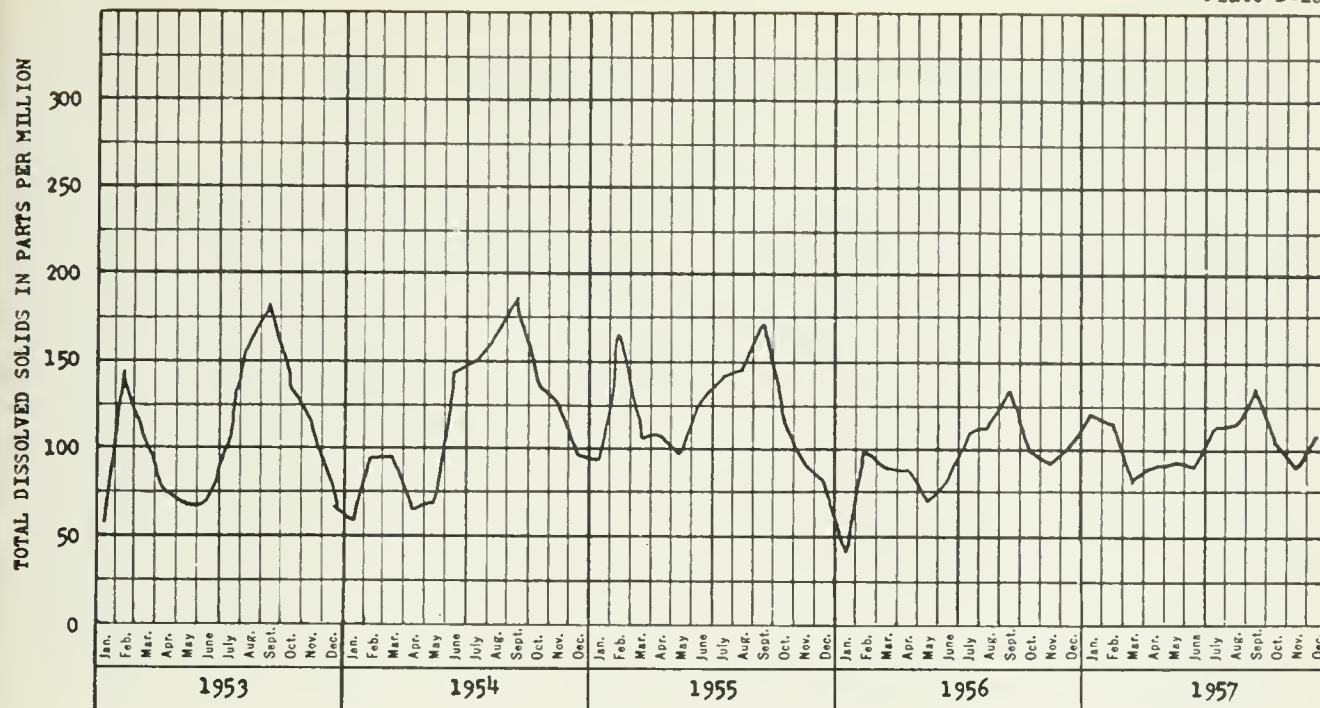




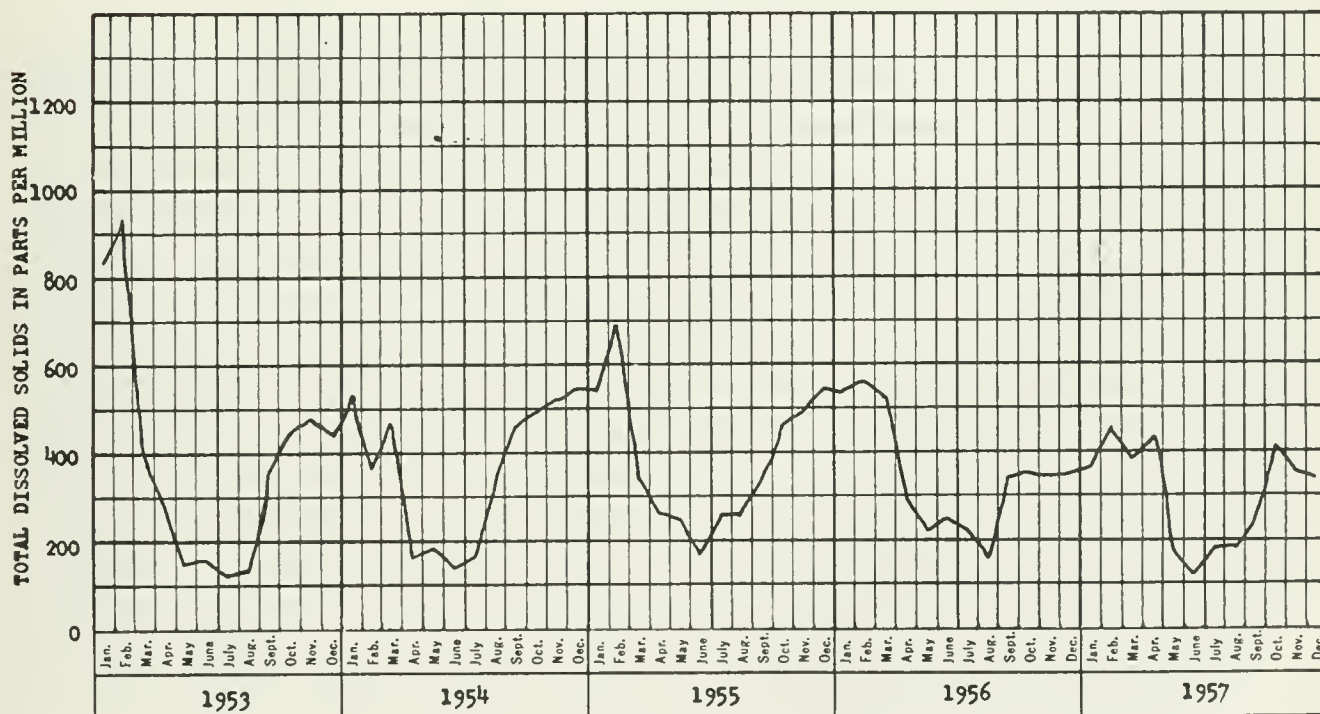
QUALITY CHARACTERISTICS  
OF  
COTTONWOOD CREEK NEAR COTTONWOOD  
(STATION 12B)



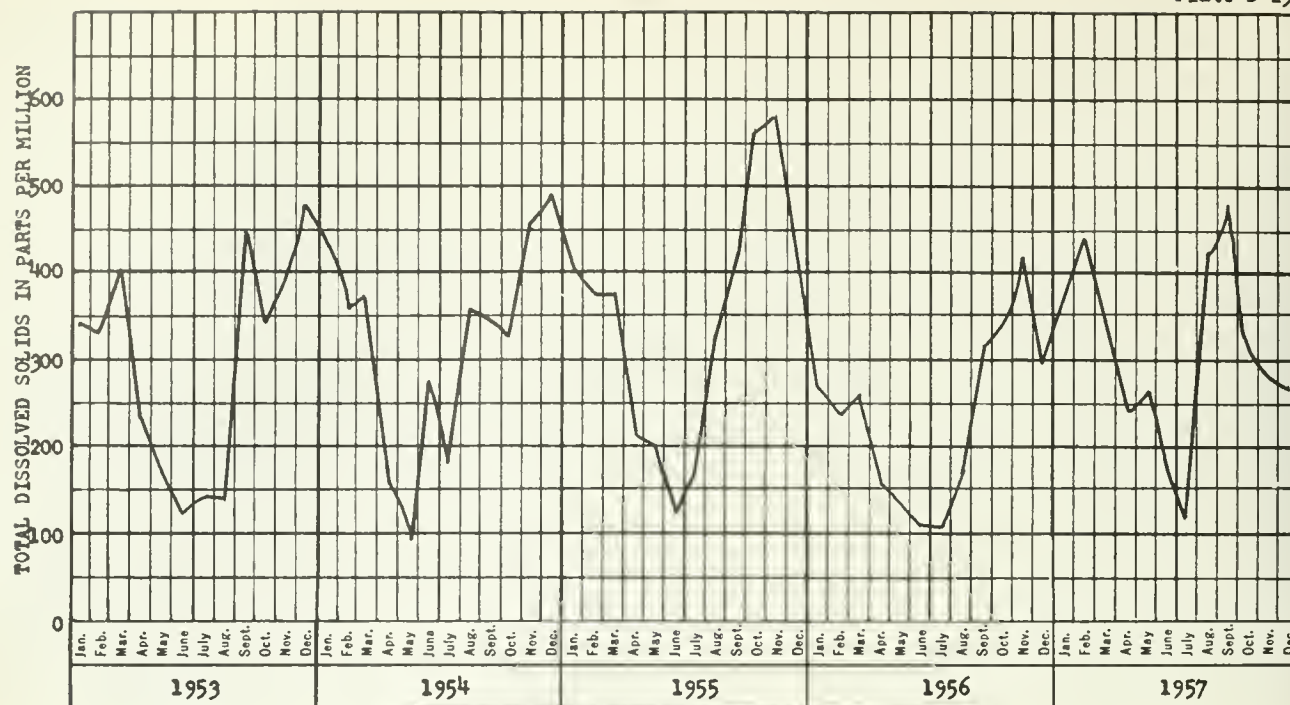
QUALITY CHARACTERISTICS  
OF  
DEER CREEK NEAR VINA  
(STATION 95)



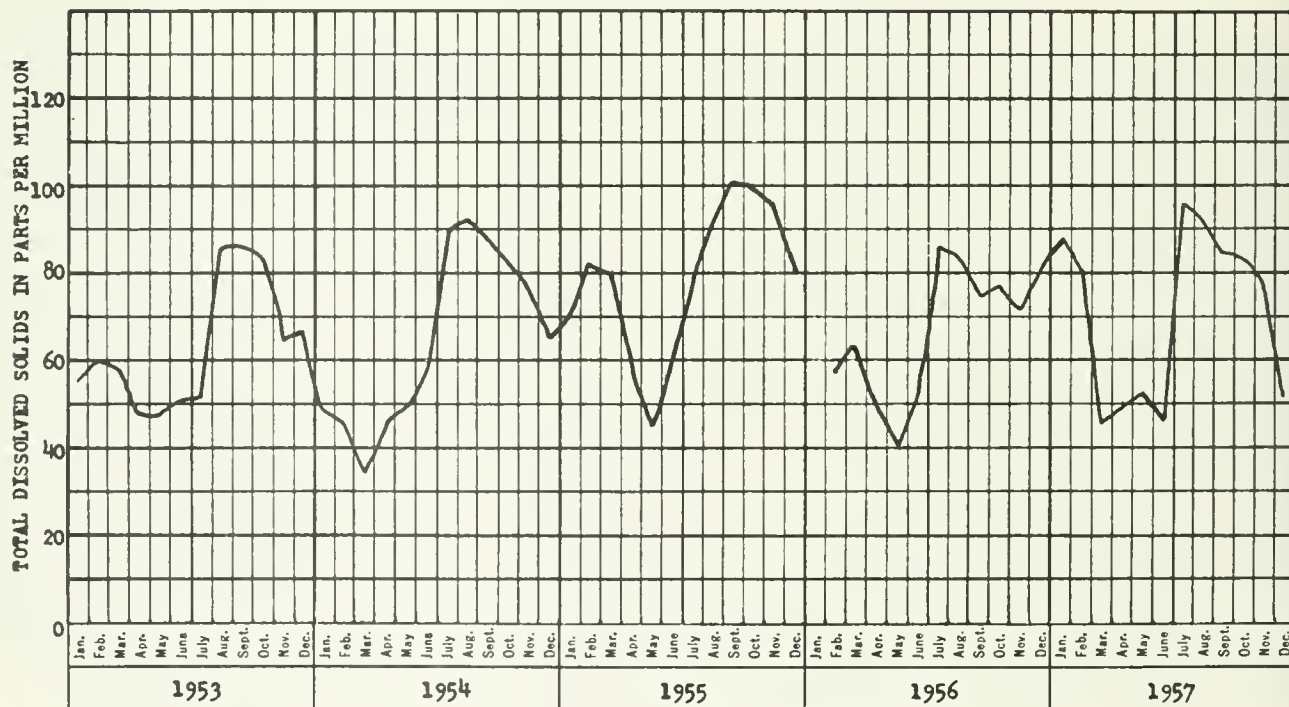
QUALITY CHARACTERISTICS  
OF  
DELTA CROSS CHANNEL NEAR WALNUT GROVE  
(STATION 98)



QUALITY CHARACTERISTICS  
OF  
DELTA-MENDOTA CANAL NEAR MENDOTA  
(STATION 92)

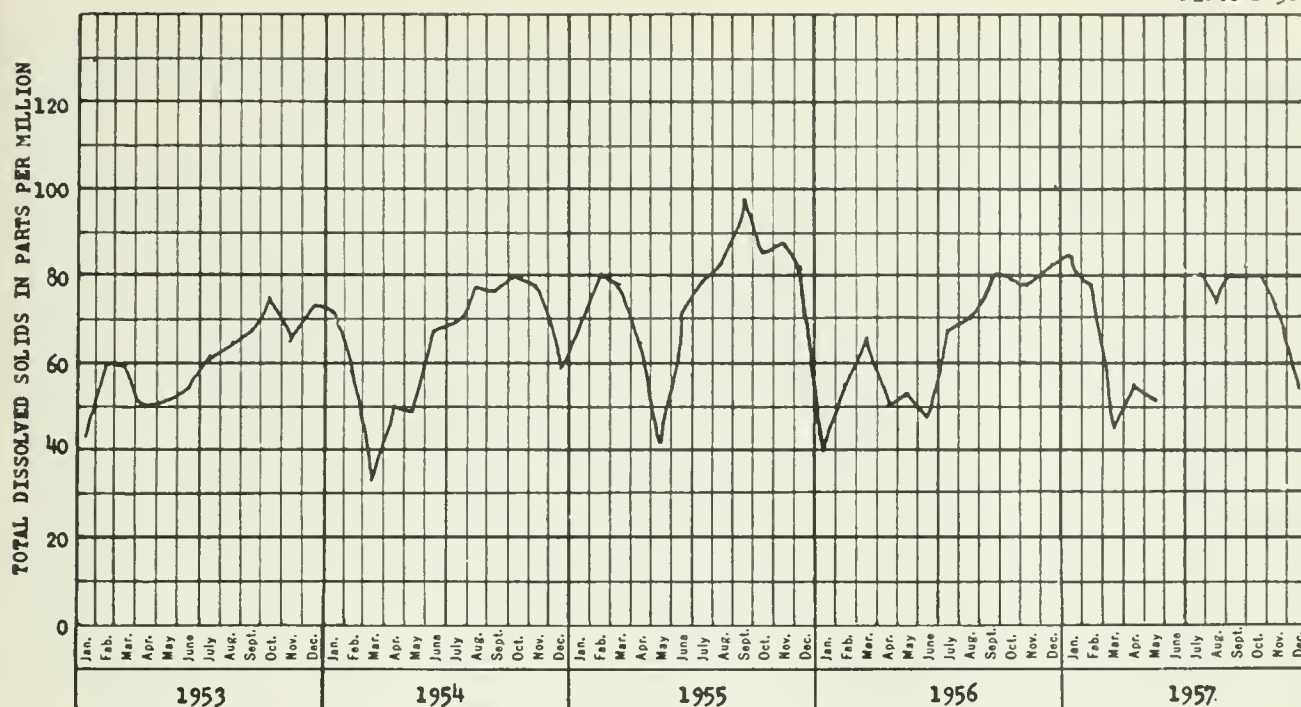


QUALITY CHARACTERISTICS  
OF  
DELTA-MENDOTA CANAL NEAR TRACY  
(STATION 93)

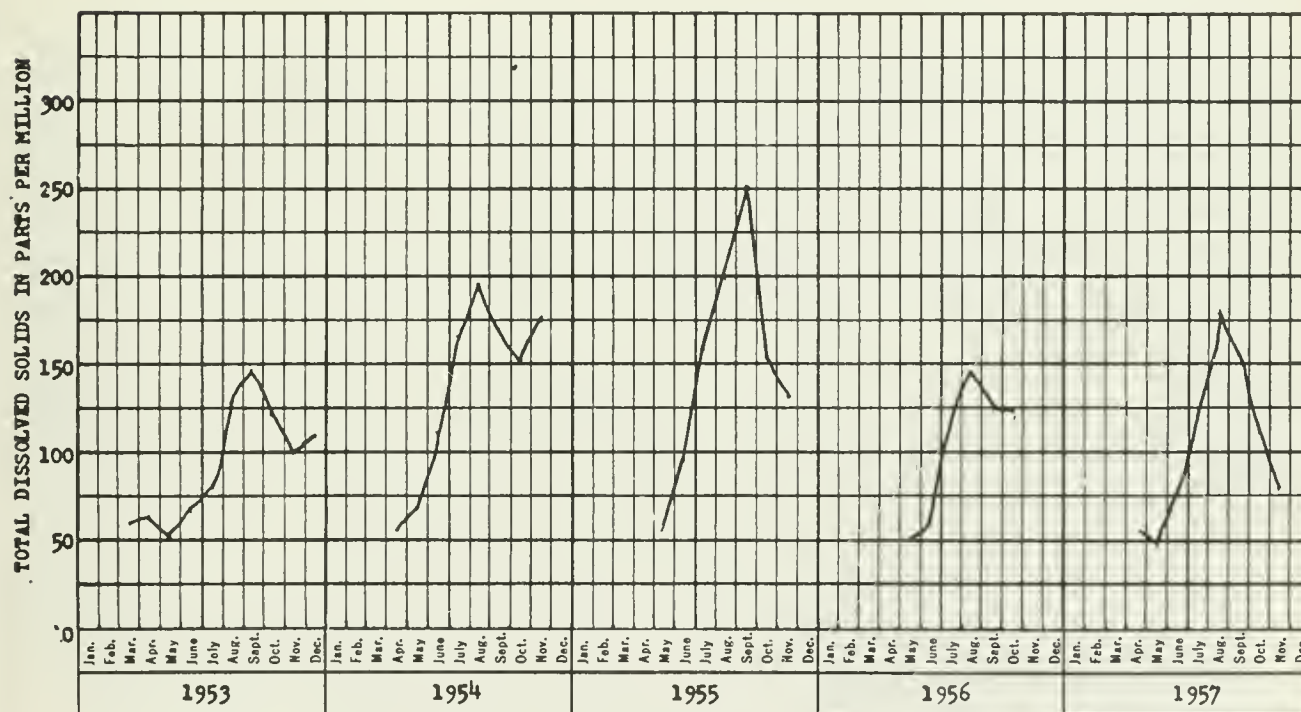


QUALITY CHARACTERISTICS  
OF  
FEATHER RIVER AT NICOLAUS  
(STATION 20)



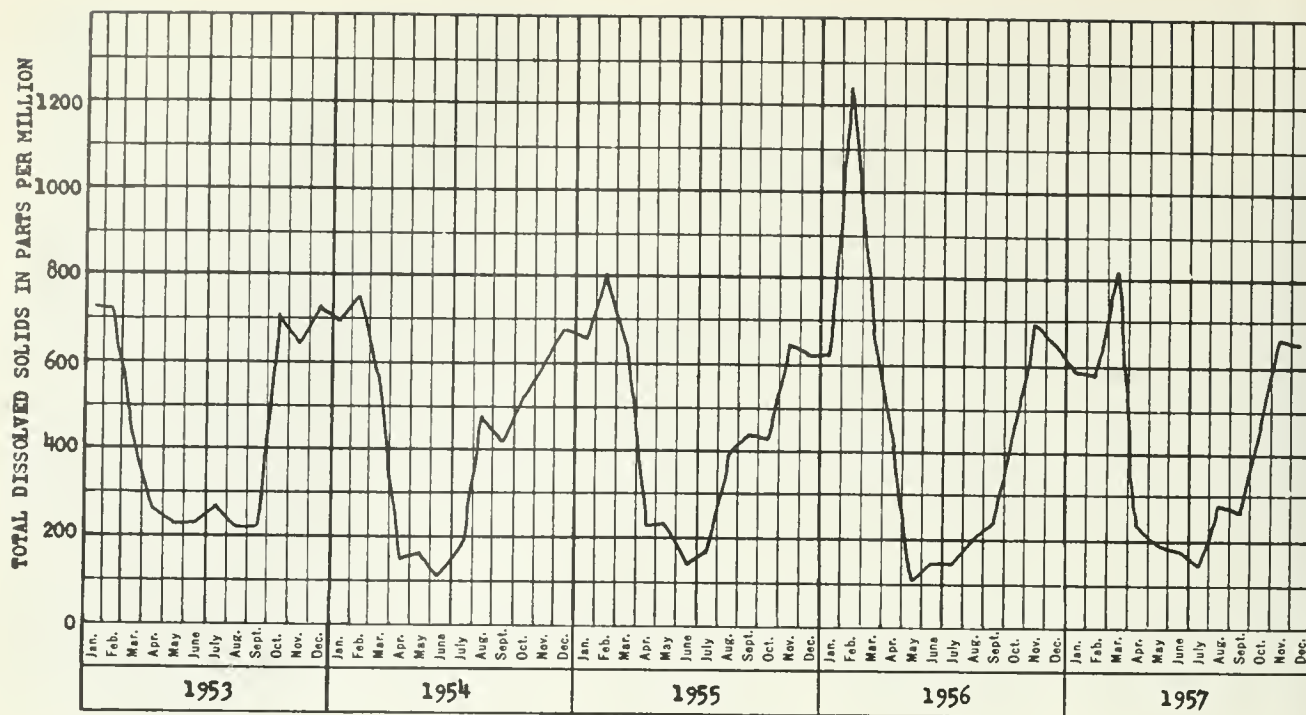


QUALITY CHARACTERISTICS  
OF  
FEATHER RIVER NEAR OROVILLE  
(STATION 19)

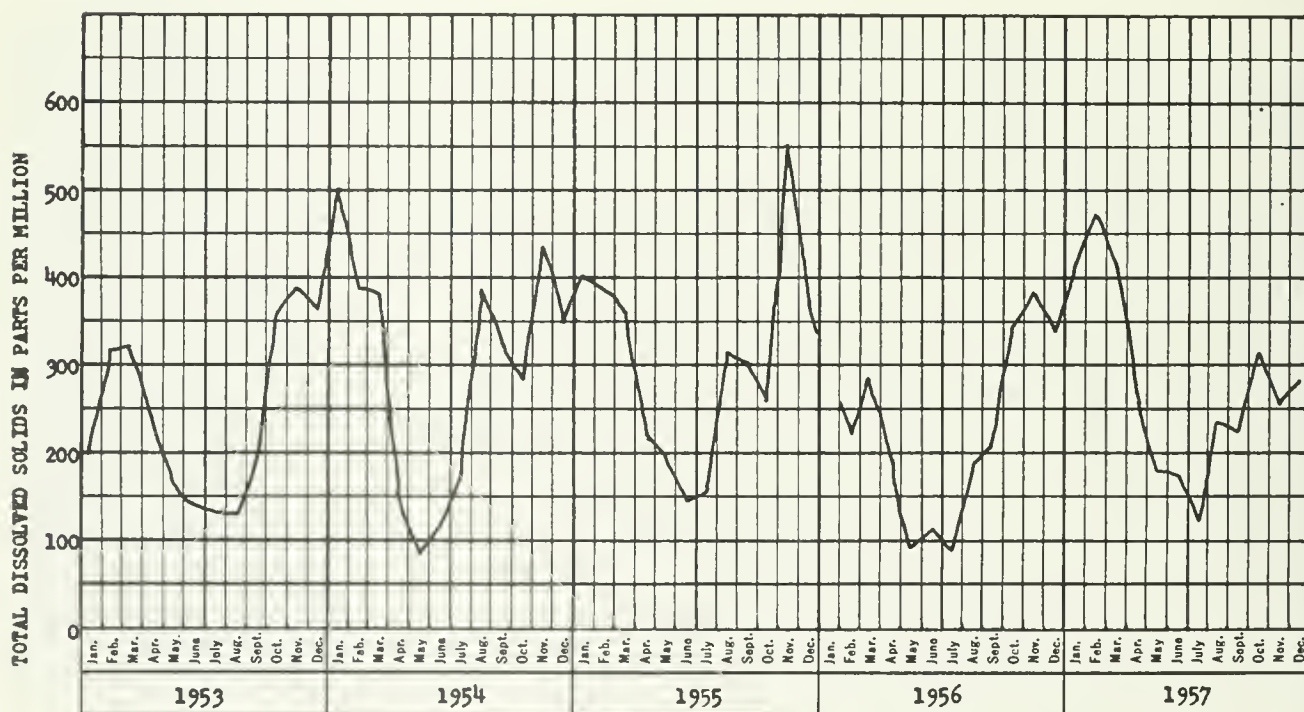


QUALITY CHARACTERISTICS  
OF  
INDIAN CREEK NEAR CRESCENT MILLS  
(STATION 17D)

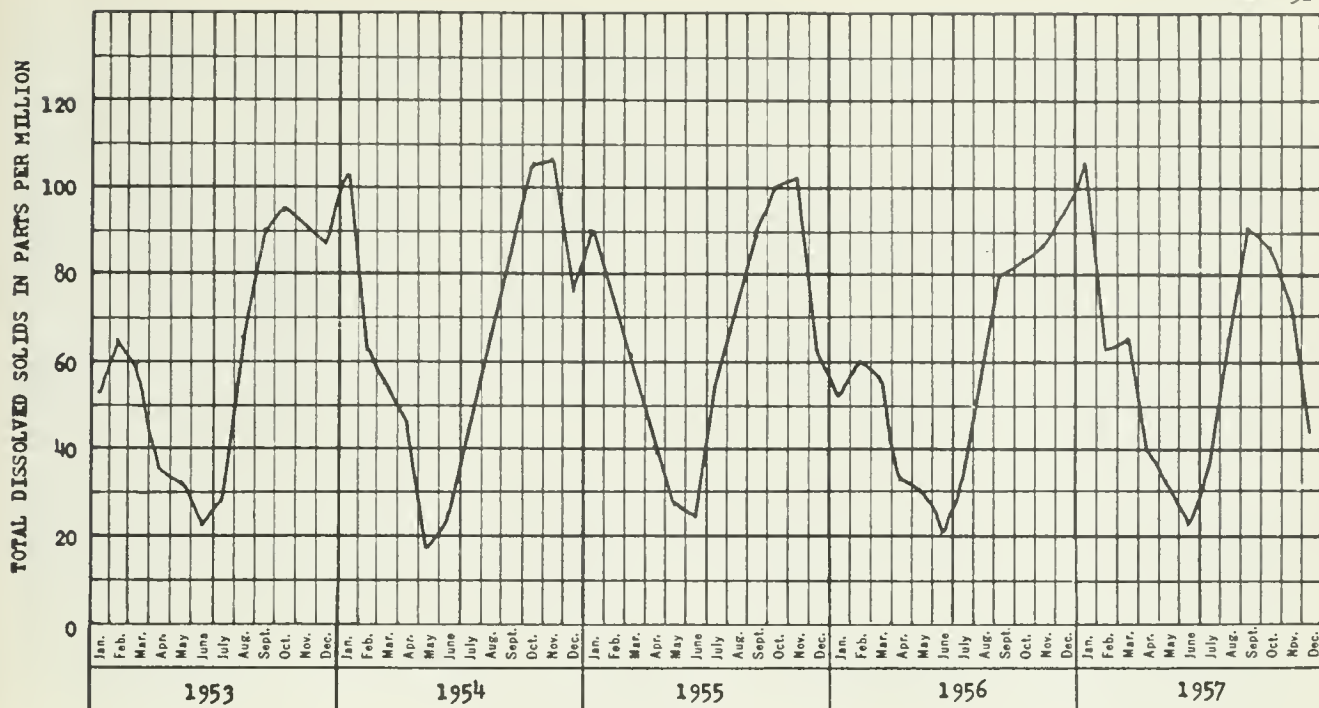




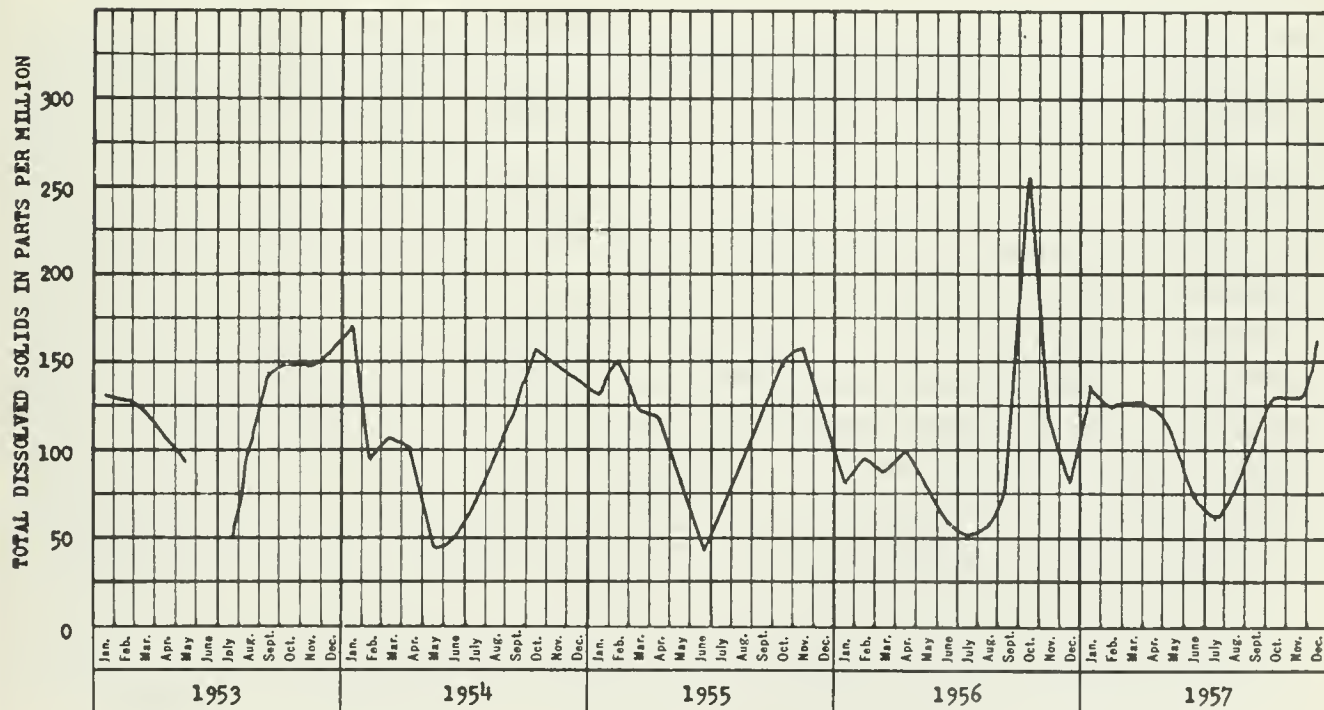
QUALITY CHARACTERISTICS  
OF  
INDIAN SLOUGH NEAR BRENTWOOD  
(STATION 107)



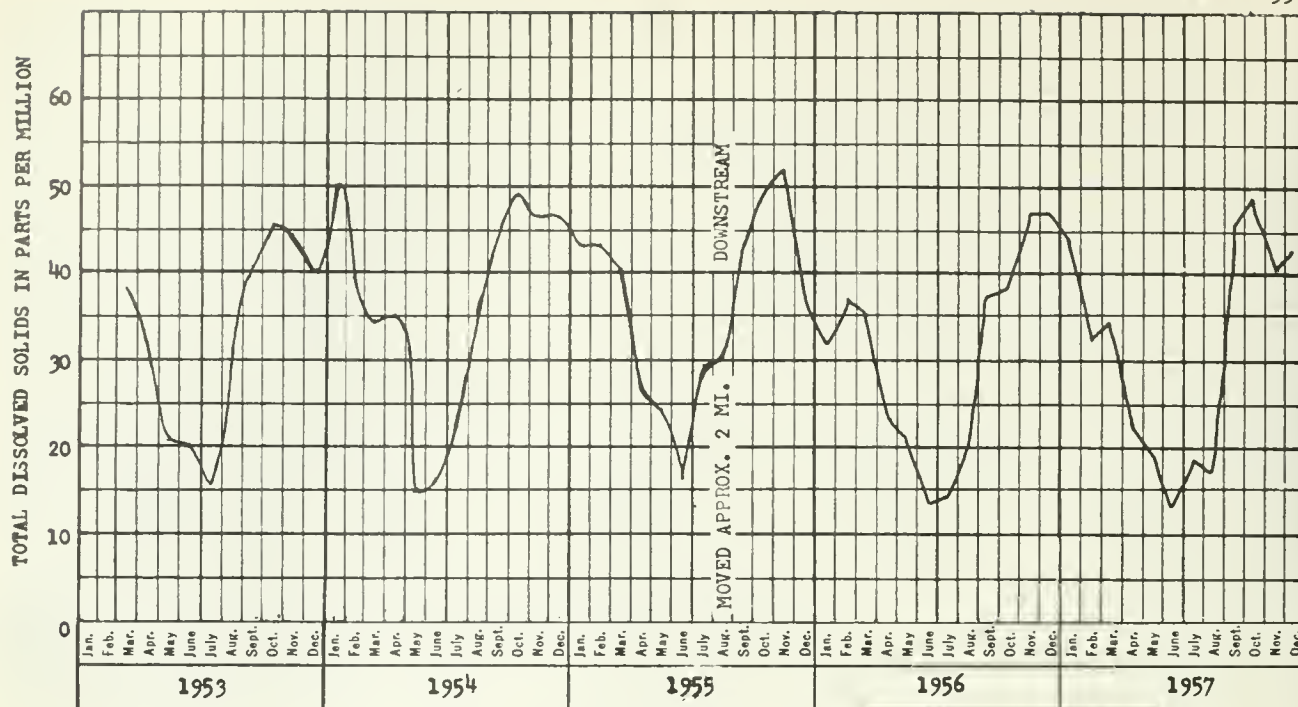
QUALITY CHARACTERISTICS  
OF  
ITALIAN SLOUGH NEAR MOUTH  
(STATION 106)



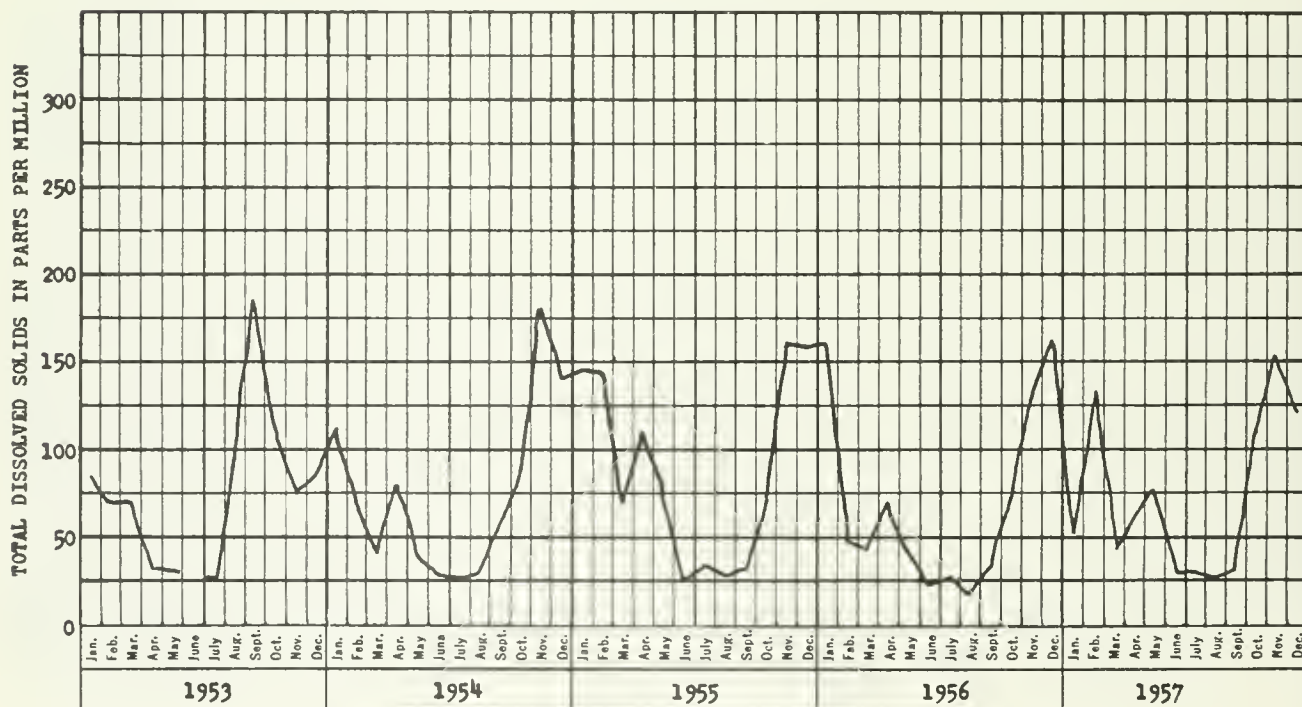
QUALITY CHARACTERISTICS  
OF  
KAWEAH RIVER NEAR THREE RIVERS  
(STATION 35)



QUALITY CHARACTERISTICS  
OF  
KERN RIVER NEAR BAKERSFIELD  
(STATION 36)

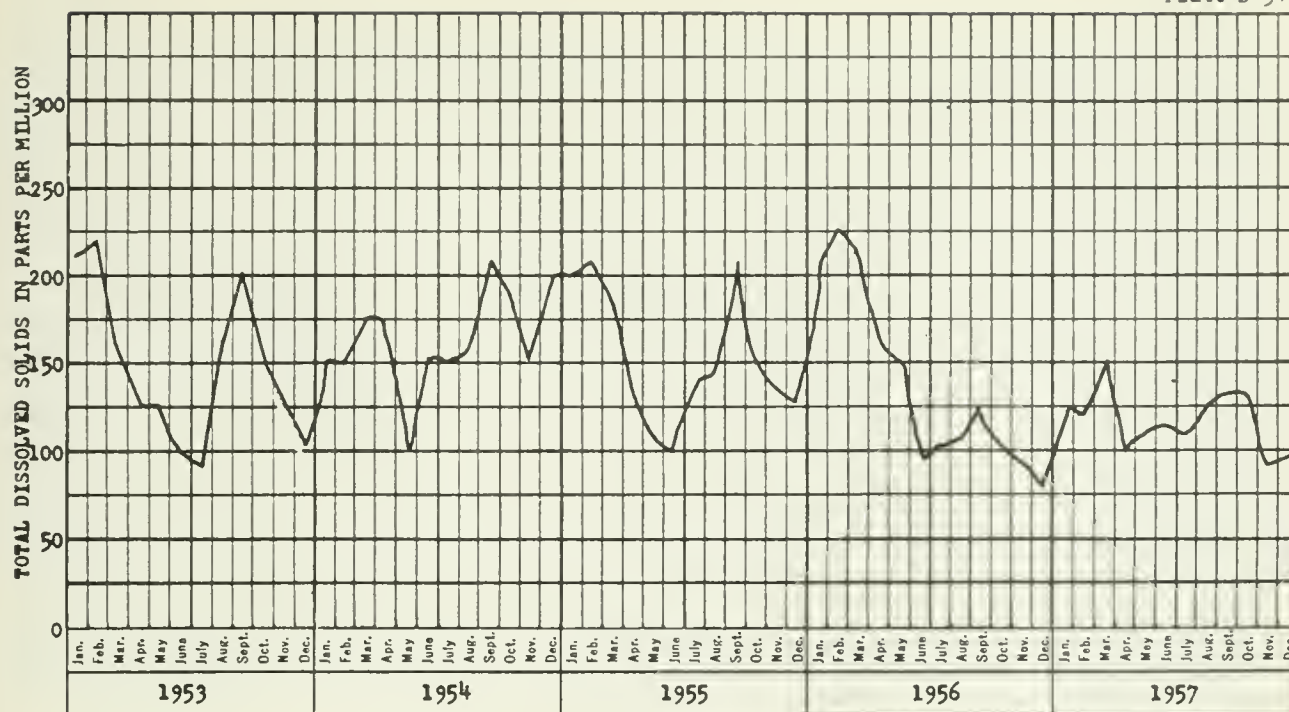


QUALITY CHARACTERISTICS  
OF  
KINGS RIVER ABOVE NORTH FORK (STATION 33, 3/53-8/55)  
AND  
KINGS RIVER BELOW NORTH FORK (STATION 33c, 9/55-12/57)

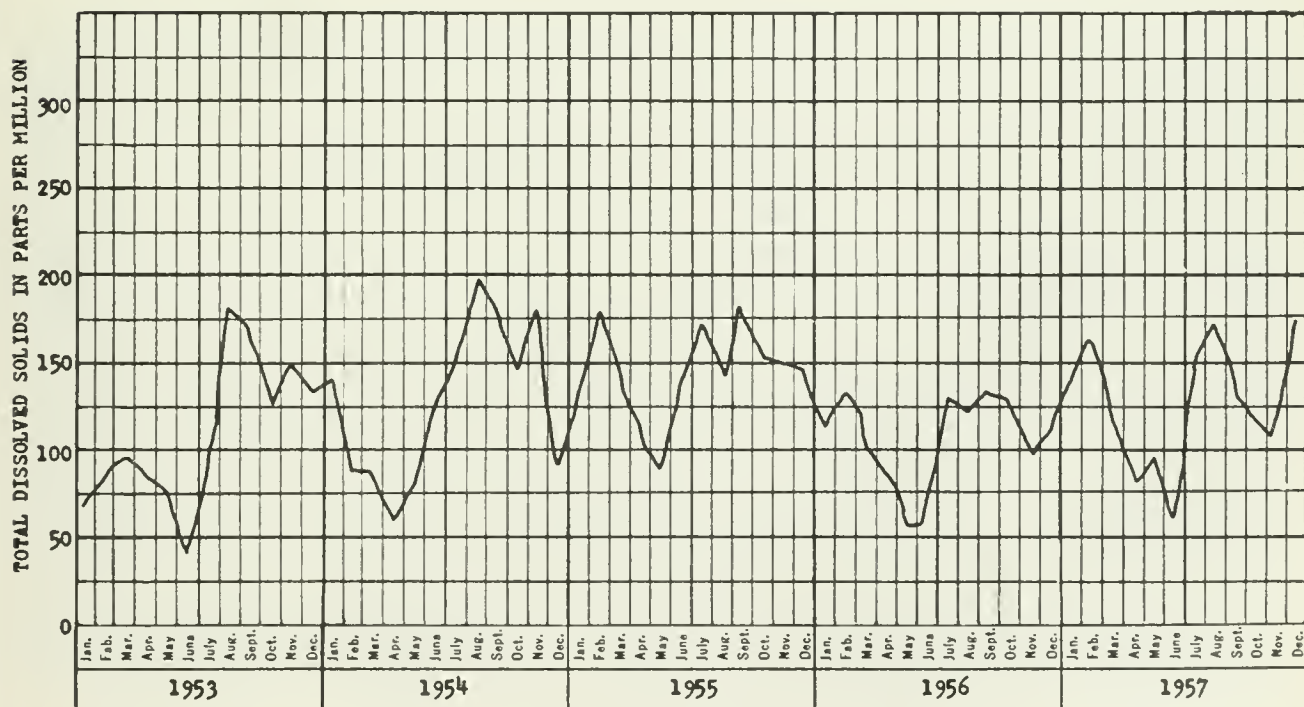


QUALITY CHARACTERISTICS  
OF  
KINGS RIVER BELOW PEOPLES WEIR  
(STATION 34)



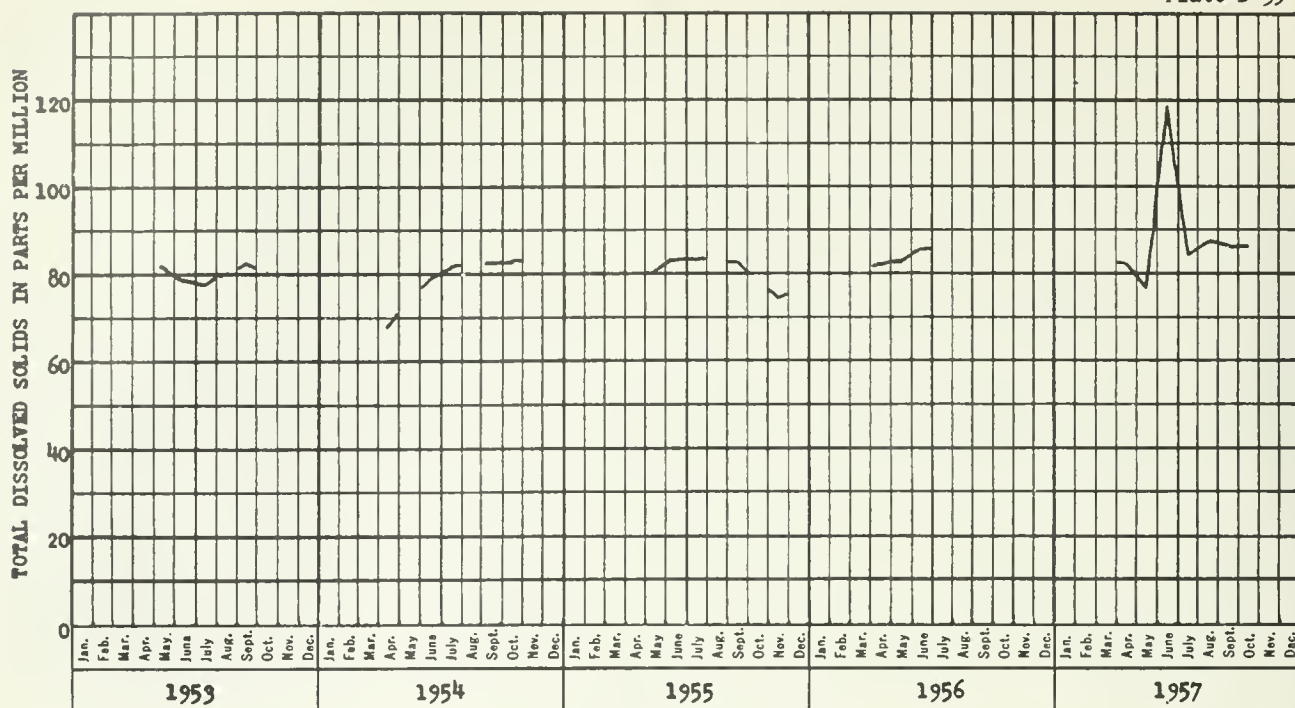


QUALITY CHARACTERISTICS  
OF  
LINDSEY SLOUGH NEAR RIO VISTA  
(STATION 110)

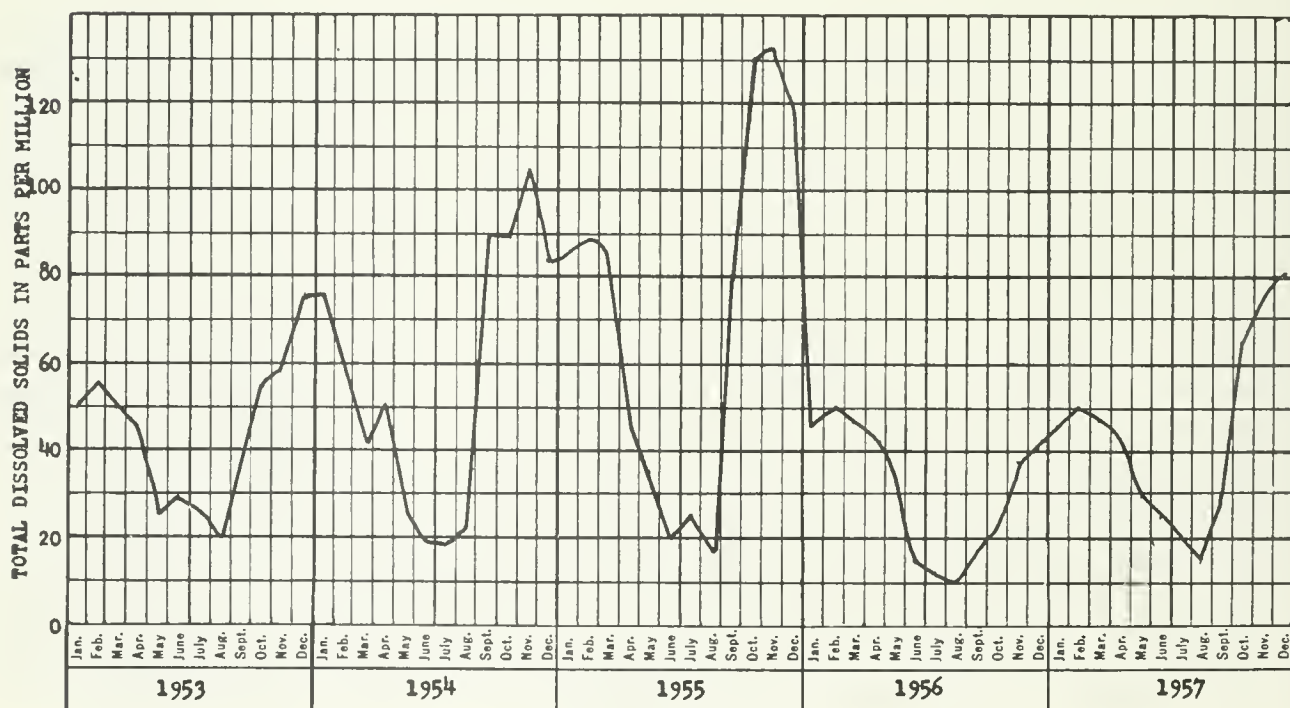


QUALITY CHARACTERISTICS  
OF  
LITTLE POTATO SLOUGH AT TERMINOUS  
(STATION 99)

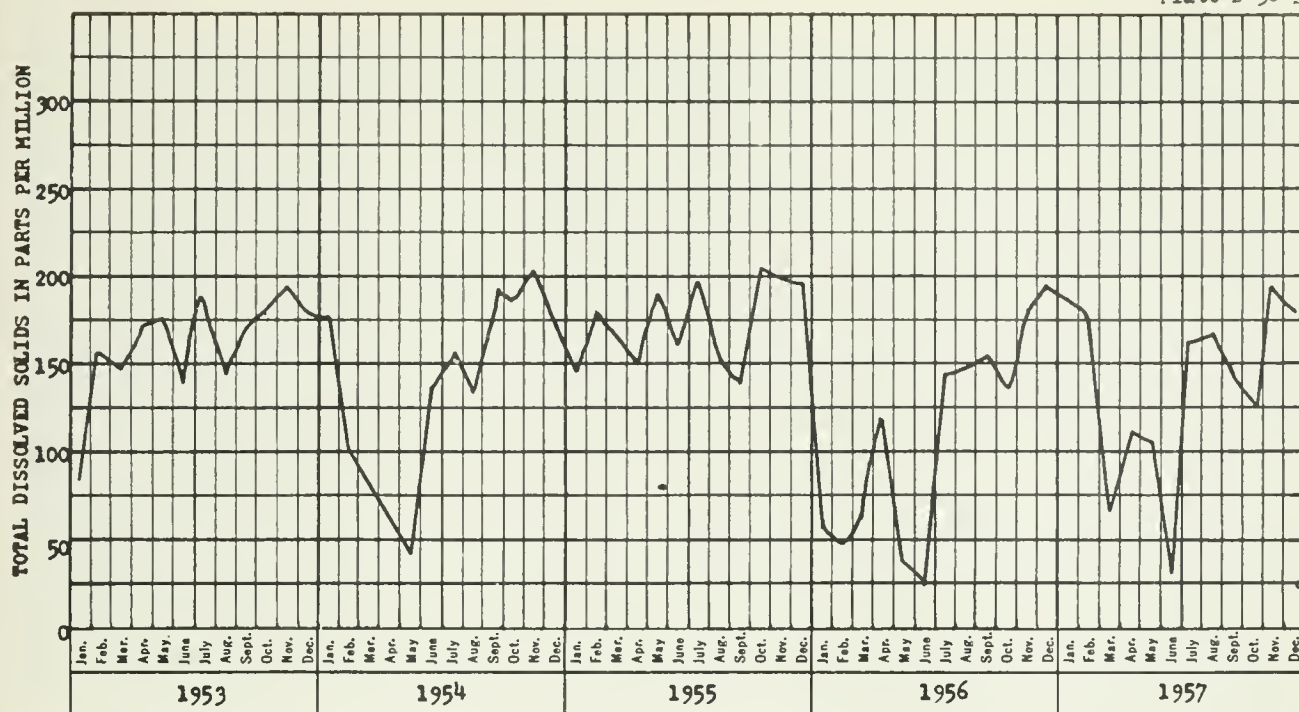




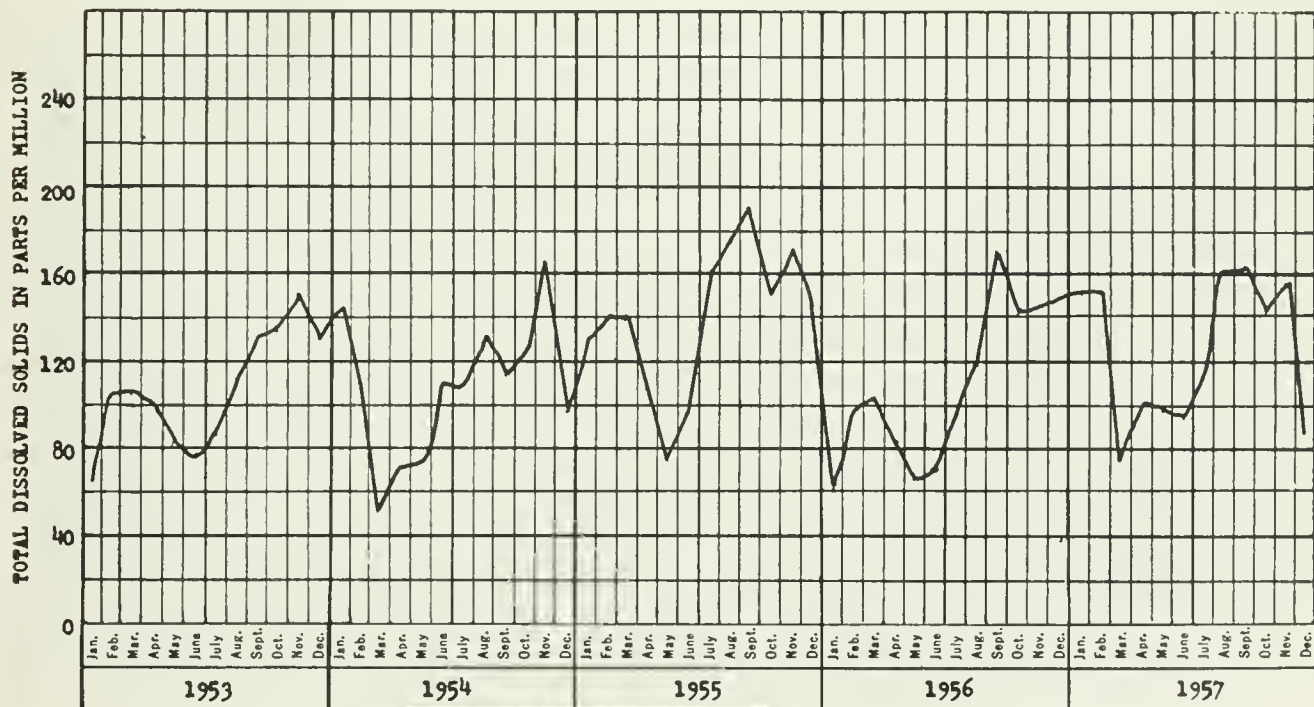
QUALITY CHARACTERISTICS  
OF  
McCLOUD RIVER ABOVE SHASTA LAKE  
(STATION 18)



QUALITY CHARACTERISTICS  
OF  
MERCED RIVER BELOW EXCHEQUER DAM  
(STATION 32A)

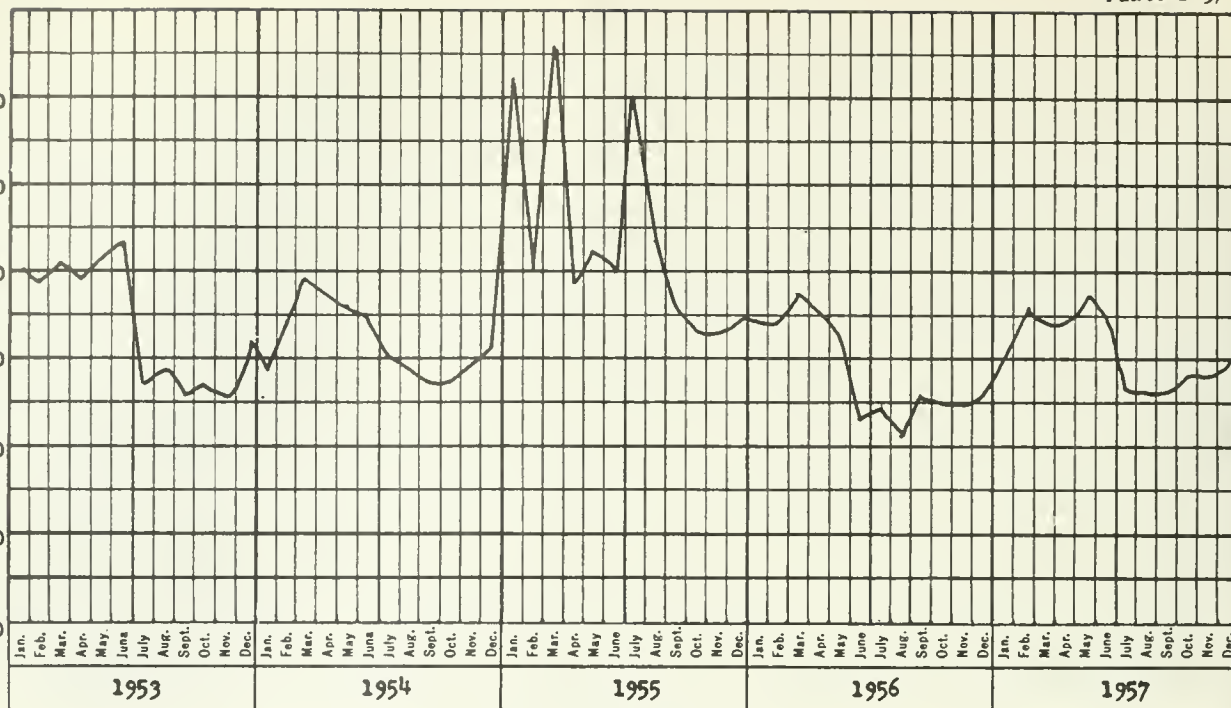


QUALITY CHARACTERISTICS  
OF  
MERCED RIVER NEAR STEVENSON  
(STATION 32)



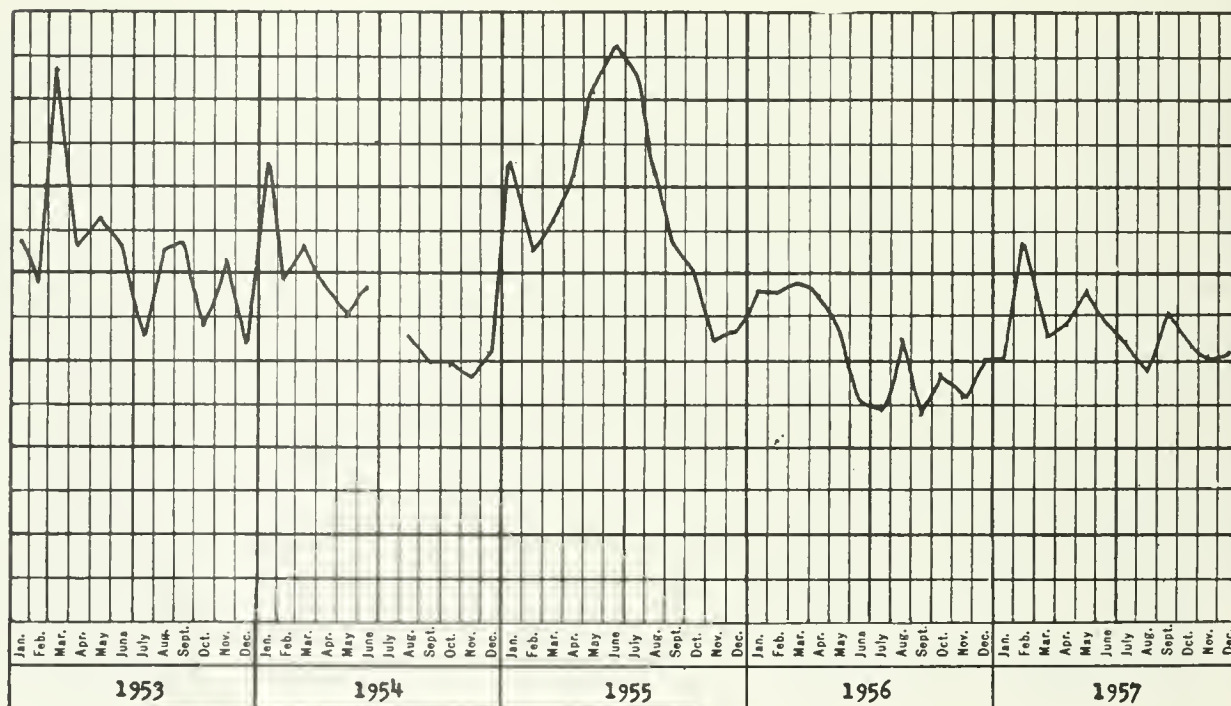
QUALITY CHARACTERISTICS  
OF  
MILL CREEK NEAR LOS MOLINOS  
(STATION 88)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



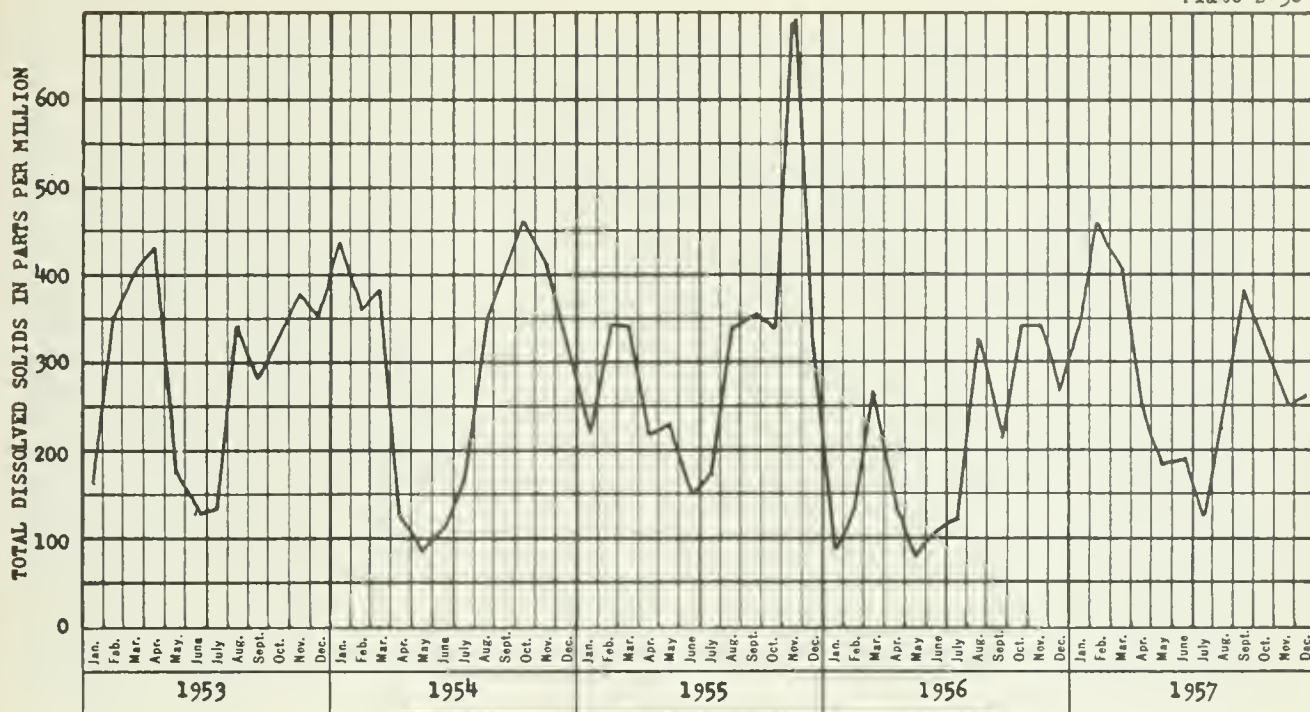
QUALITY CHARACTERISTICS  
OF  
MOKELUMNE RIVER NEAR LANCHA PLANA  
(STATION 23A)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION

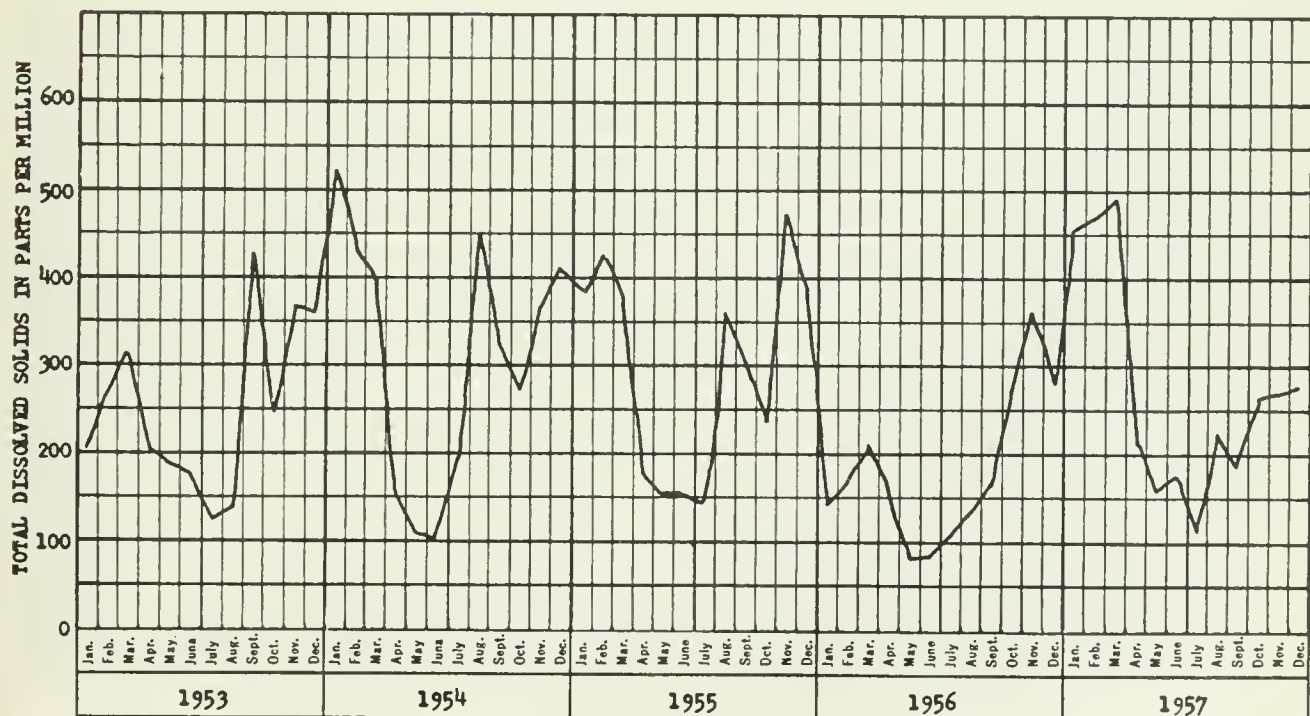


QUALITY CHARACTERISTICS  
OF  
MOKELUMNE RIVER AT WOODBRIDGE  
(STATION 23)



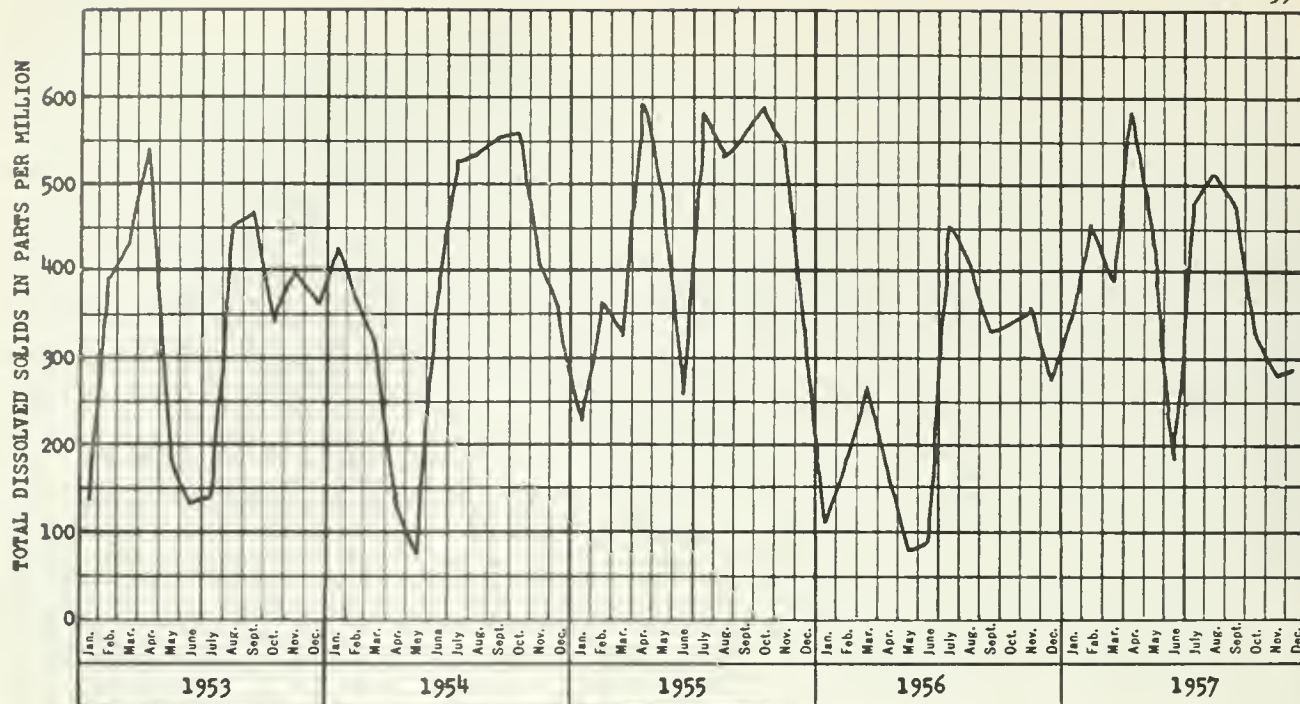


QUALITY CHARACTERISTICS  
OF  
OLD RIVER AT CLIFTON COURT FERRY  
(STATION 104)

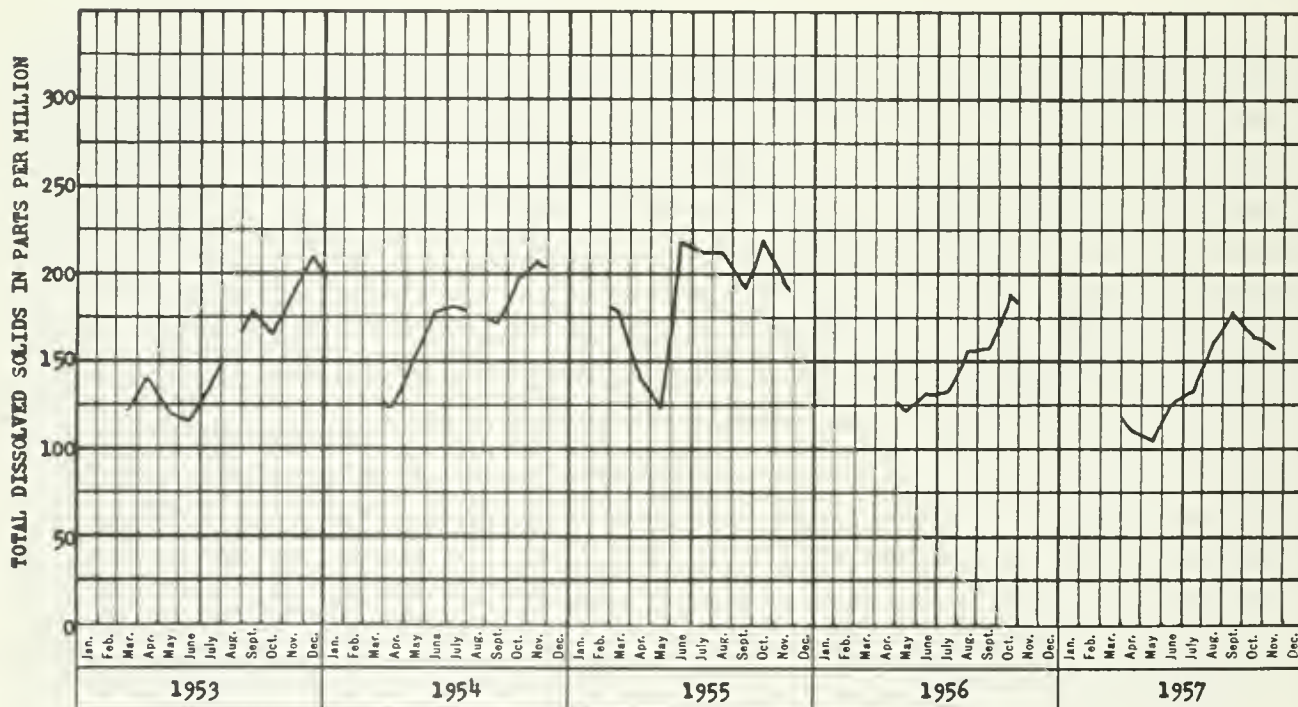


QUALITY CHARACTERISTICS  
OF  
OLD RIVER AT ORWOOD BRIDGE  
(STATION 108)

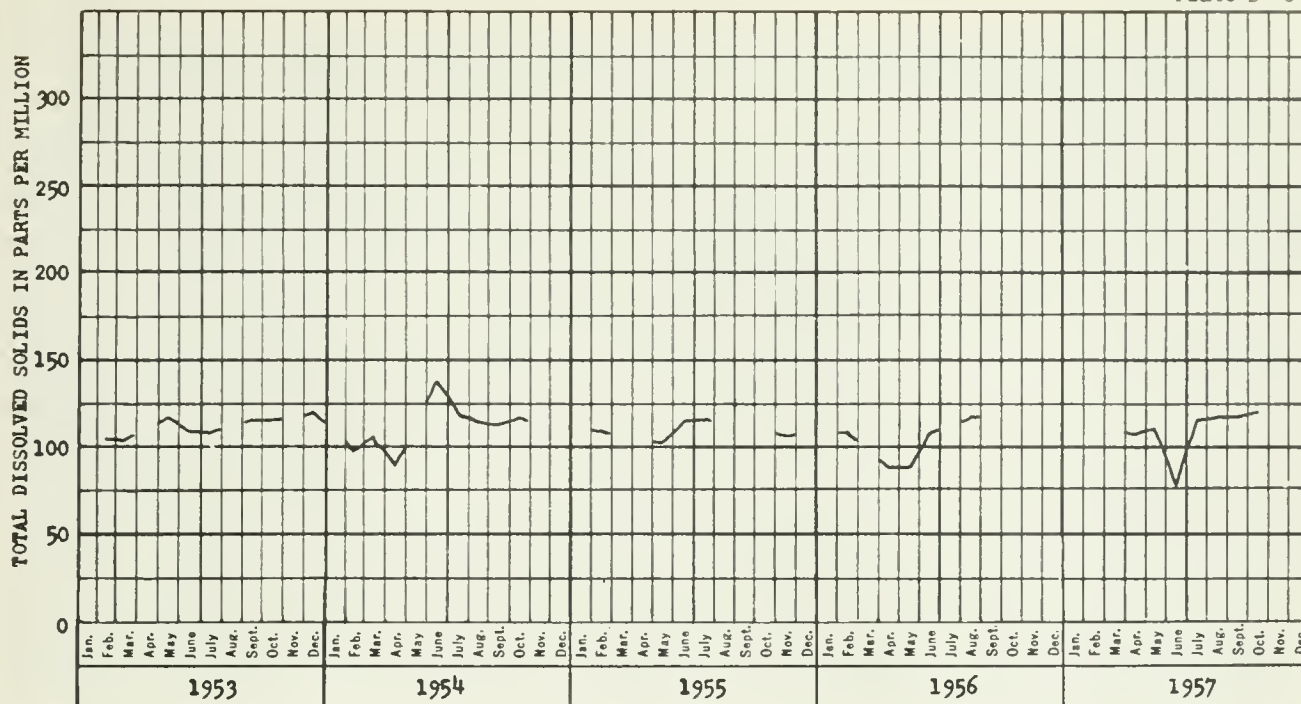




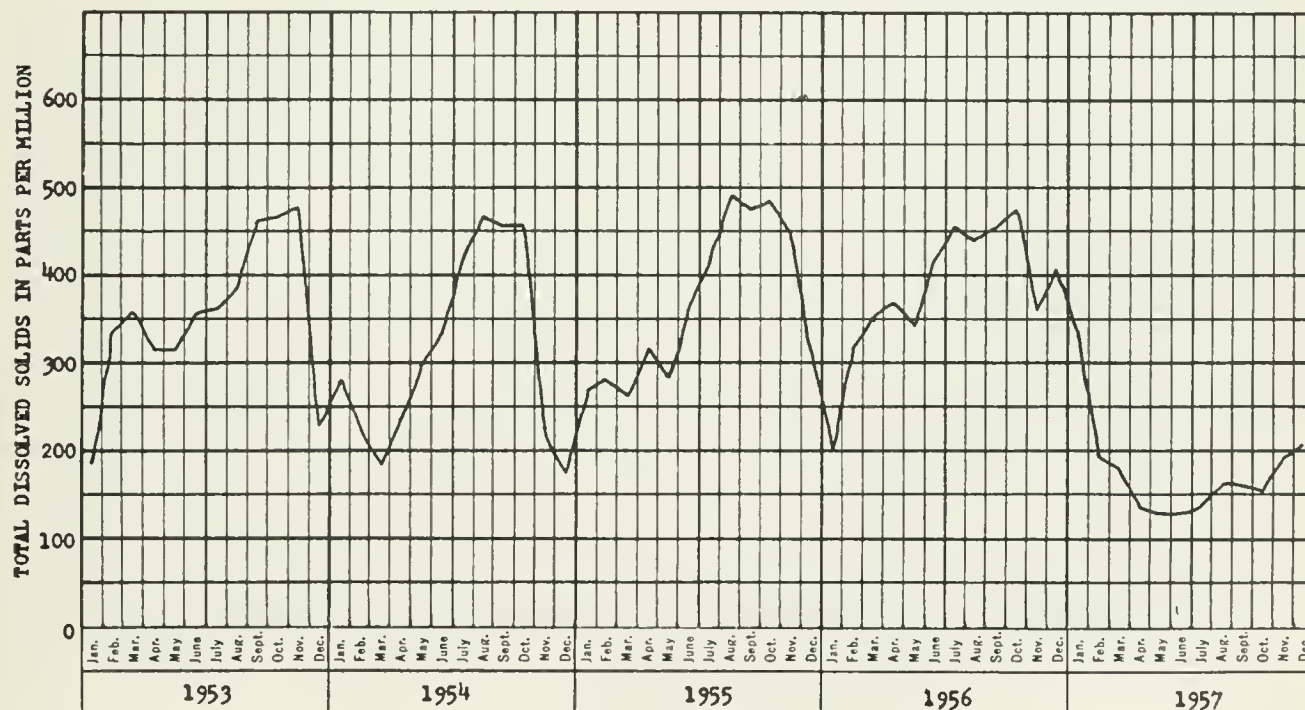
QUALITY CHARACTERISTICS  
OF  
OLD RIVER NEAR TRACY  
(STATION 103)



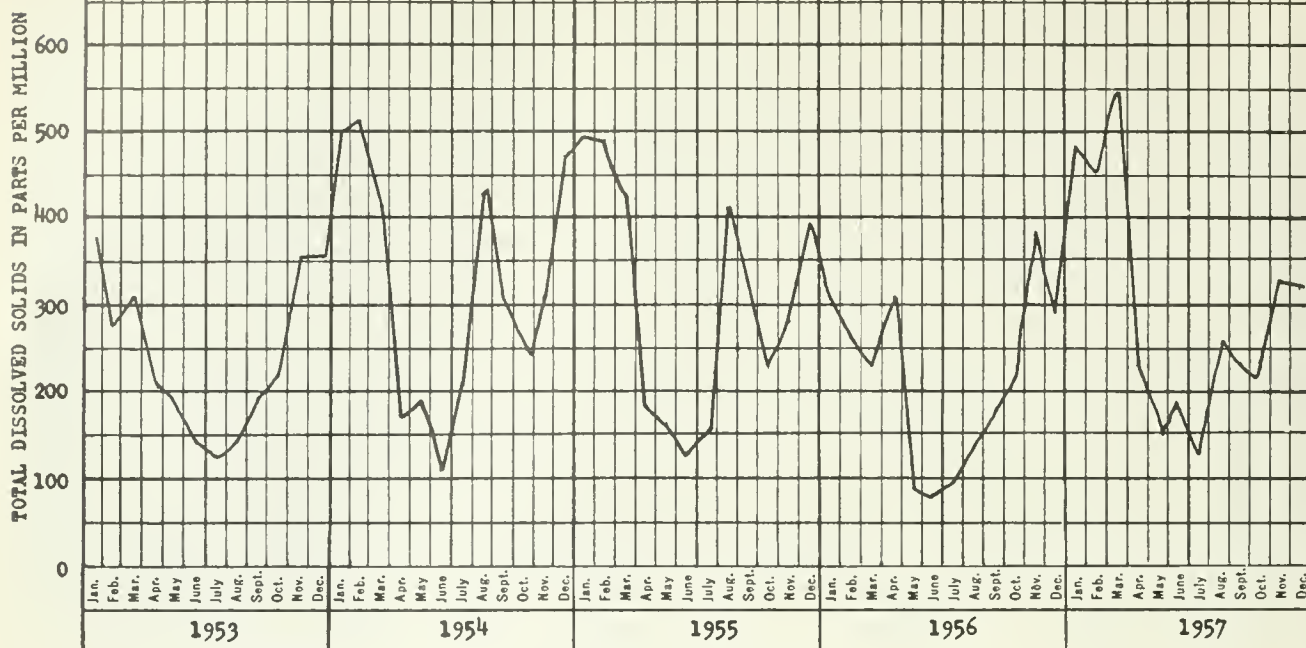
QUALITY CHARACTERISTICS  
OF  
PIT RIVER NEAR CANBY  
(STATION 17A)



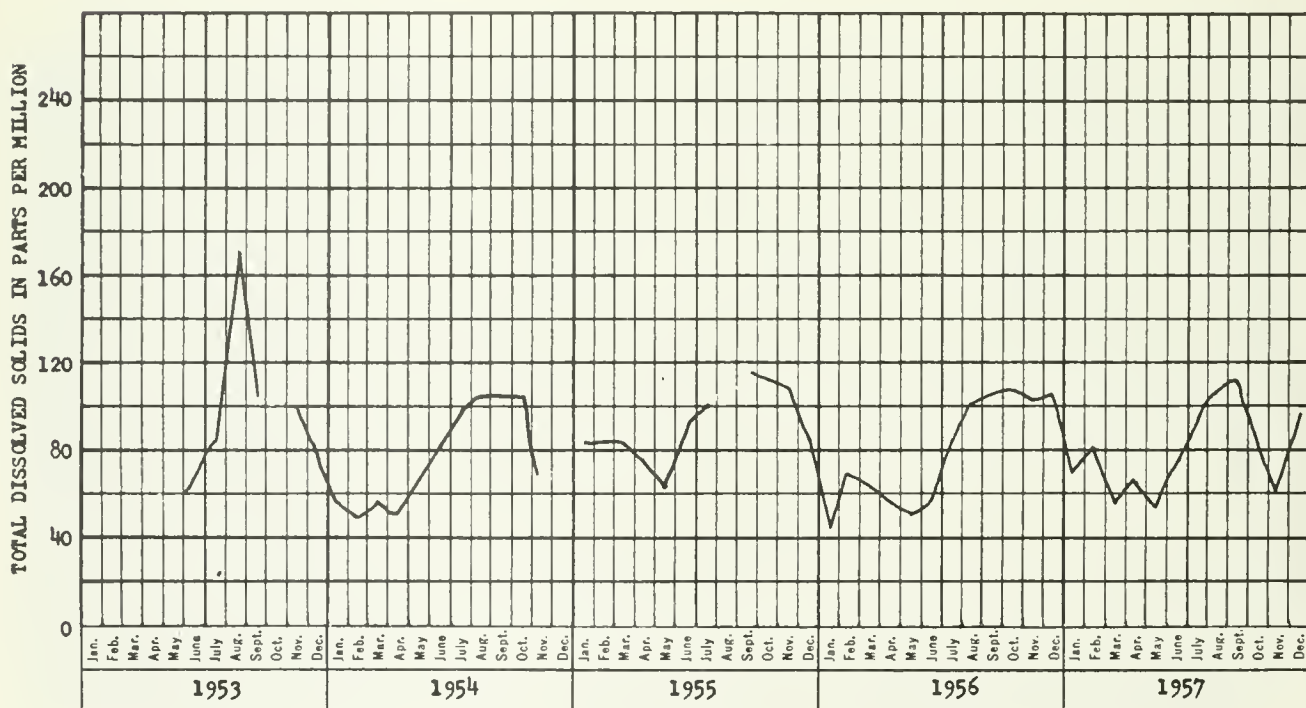
QUALITY CHARACTERISTICS  
OF  
PIT RIVER NEAR MONTGOMERY CREEK  
(STATION 17)



QUALITY CHARACTERISTICS  
OF  
PUTAH CREEK NEAR WINTERS  
(STATION 81)

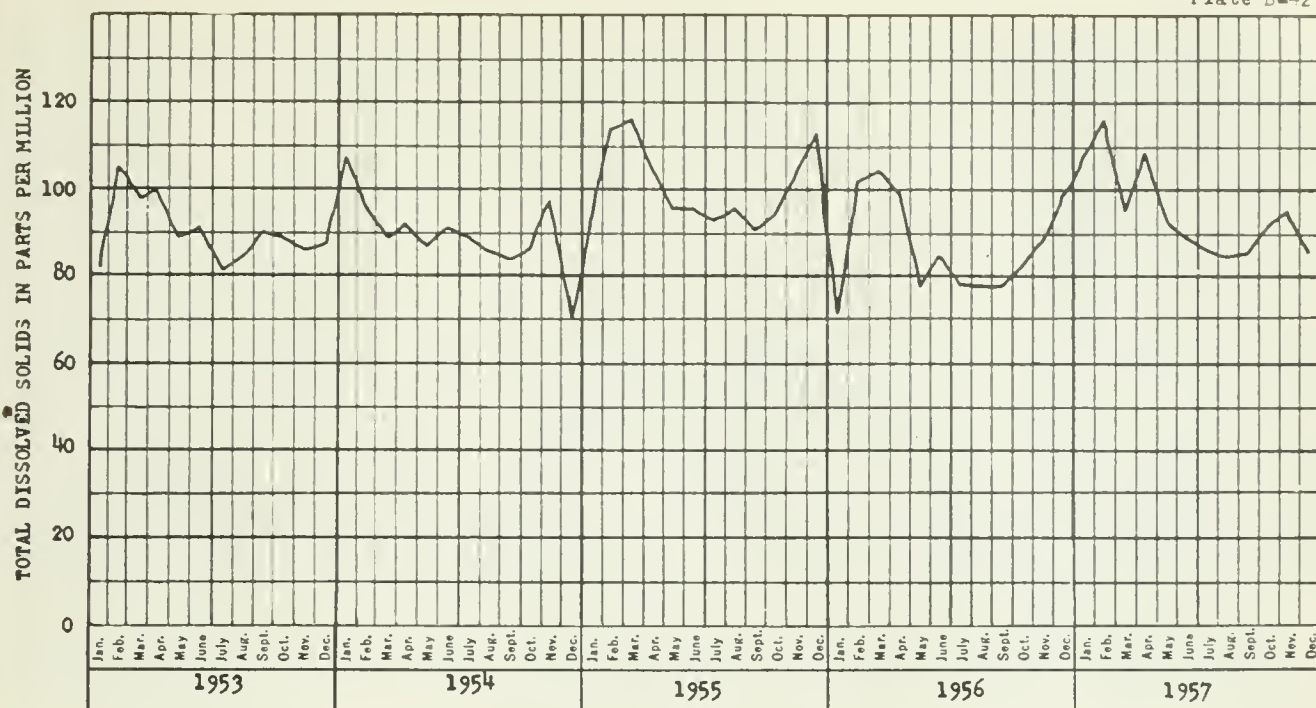


QUALITY CHARACTERISTICS  
OF  
ROCK SLOUGH NEAR KNIGHTSEN  
(Station 109)

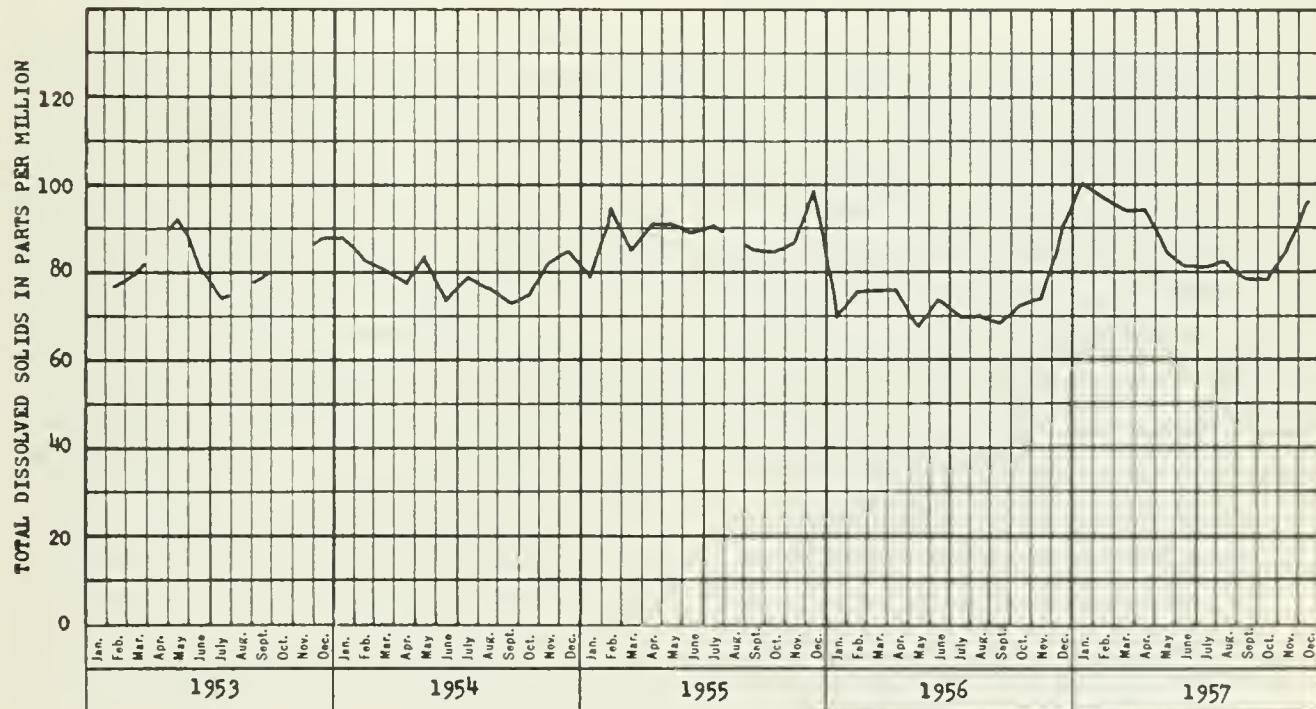


QUALITY CHARACTERISTICS  
OF  
SACRAMENTO RIVER AT DELTA  
(STATION 11)



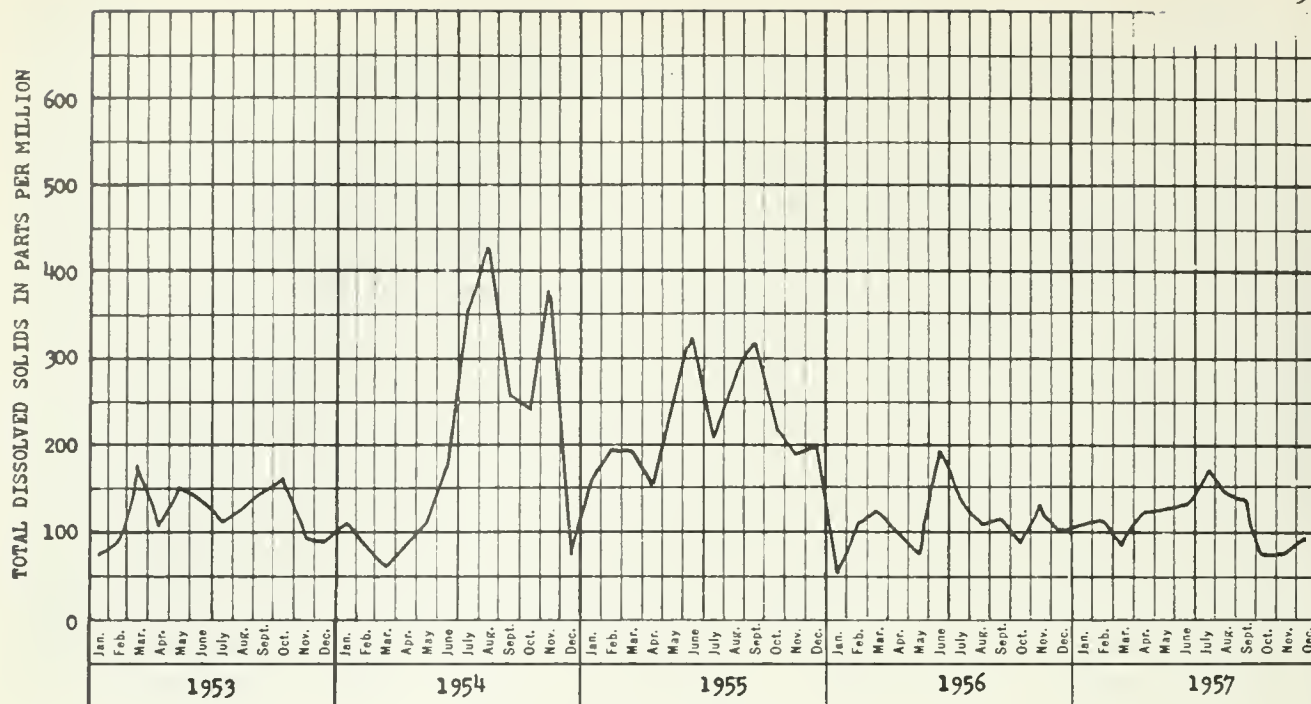


QUALITY CHARACTERISTICS  
OF  
SACRAMENTO RIVER NEAR HAMILTON CITY  
(STATION 13)

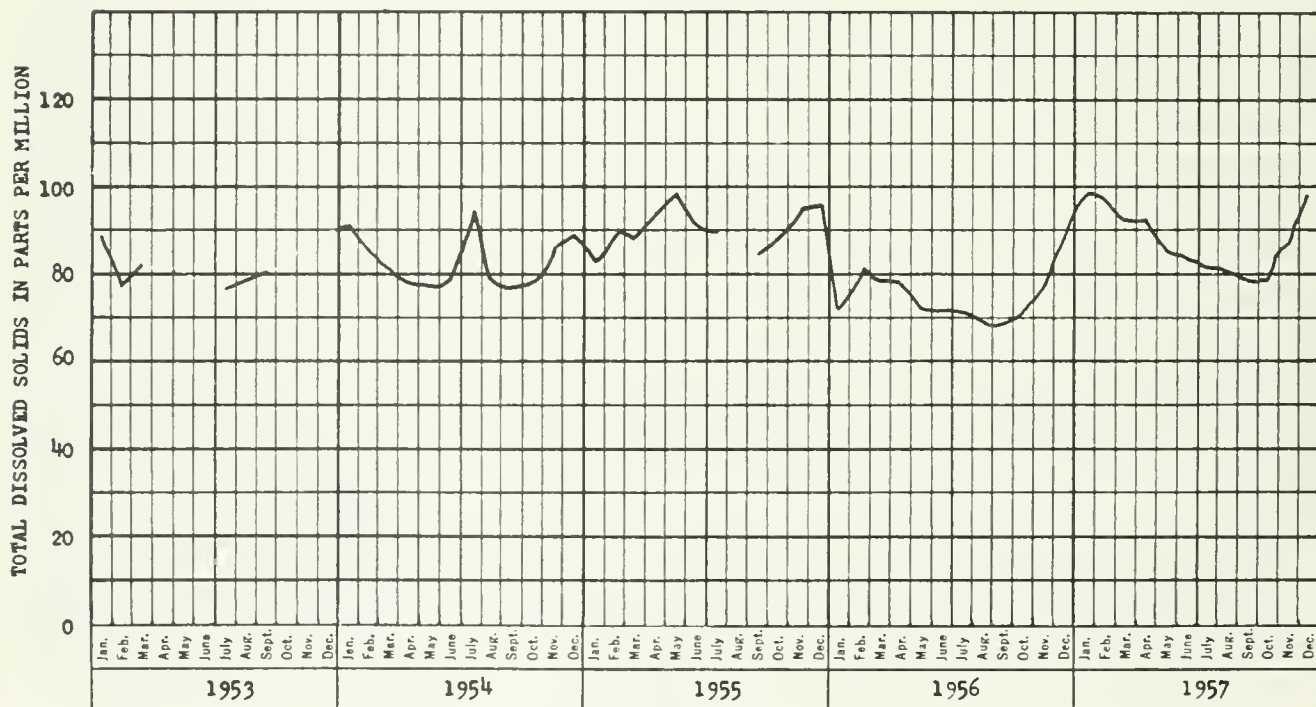


QUALITY CHARACTERISTICS  
OF  
SACRAMENTO RIVER AT KESWICK  
(STATION 12)

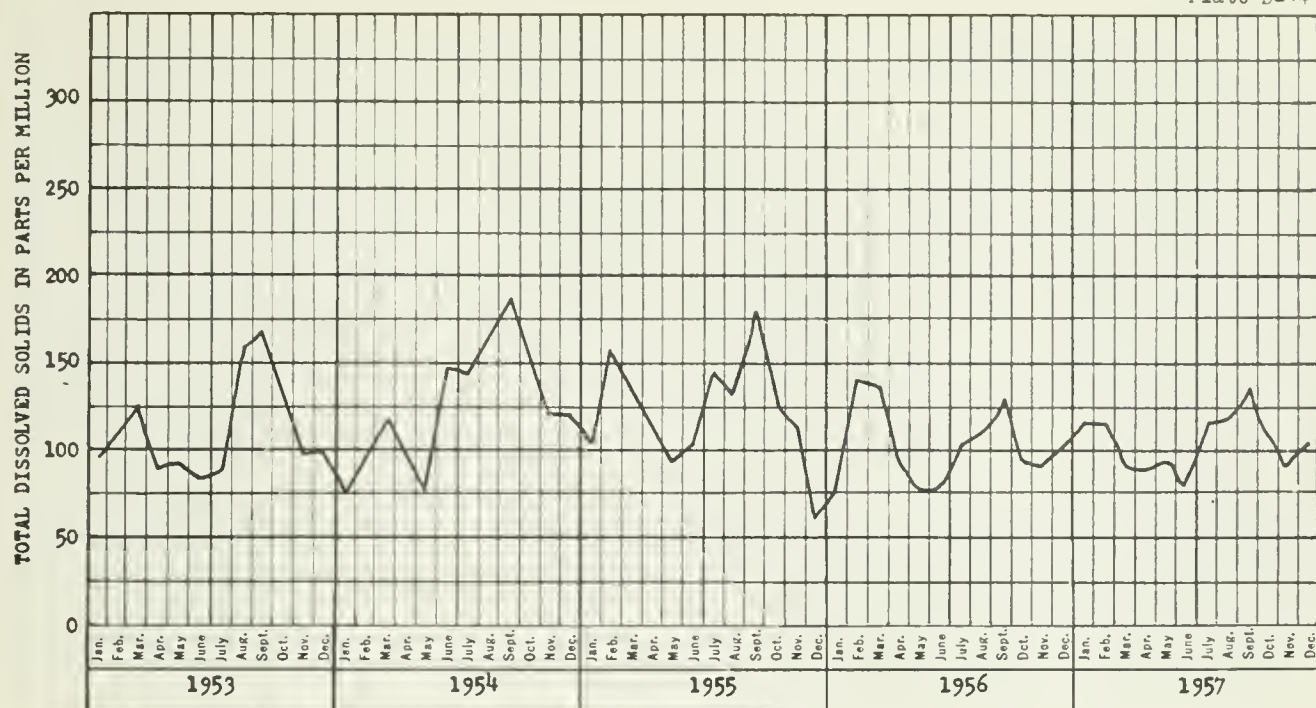




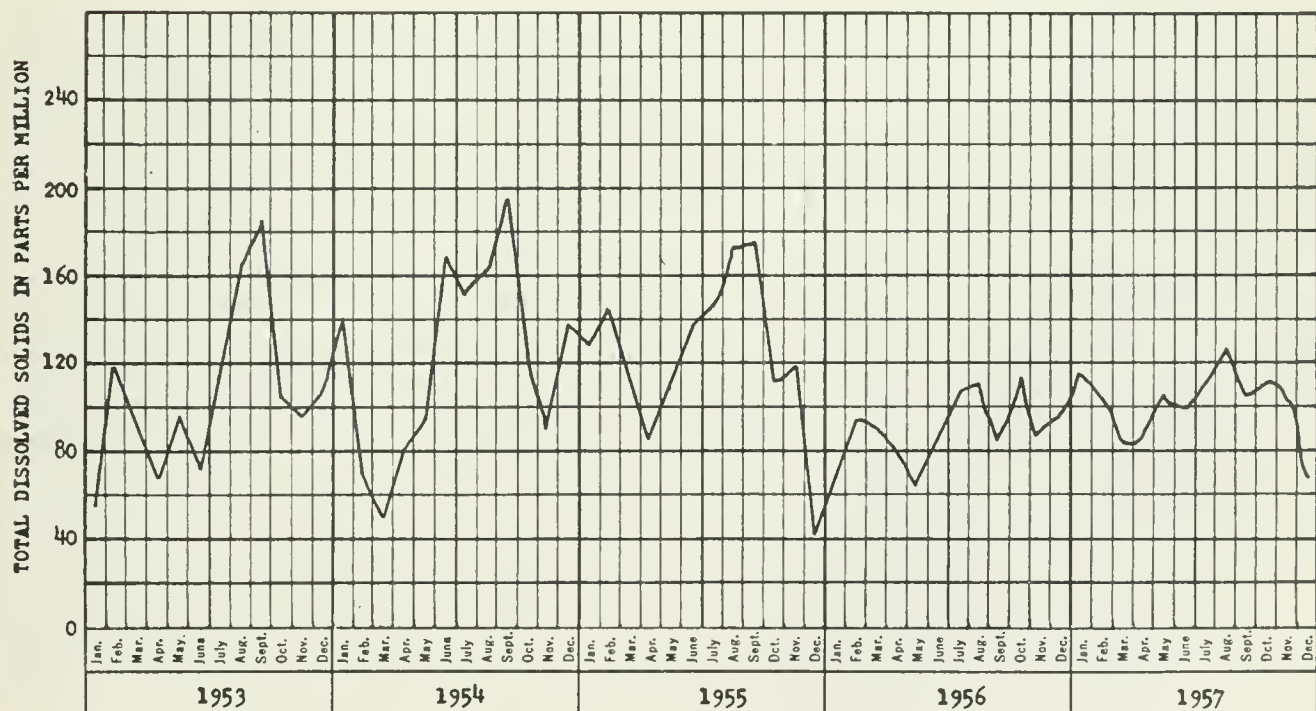
QUALITY CHARACTERISTICS  
OF  
SACRAMENTO RIVER AT KNIGHTS LANDING  
(STATION 14)



QUALITY CHARACTERISTICS  
OF  
SACRAMENTO RIVER NEAR REDDING  
(STATION 12A)

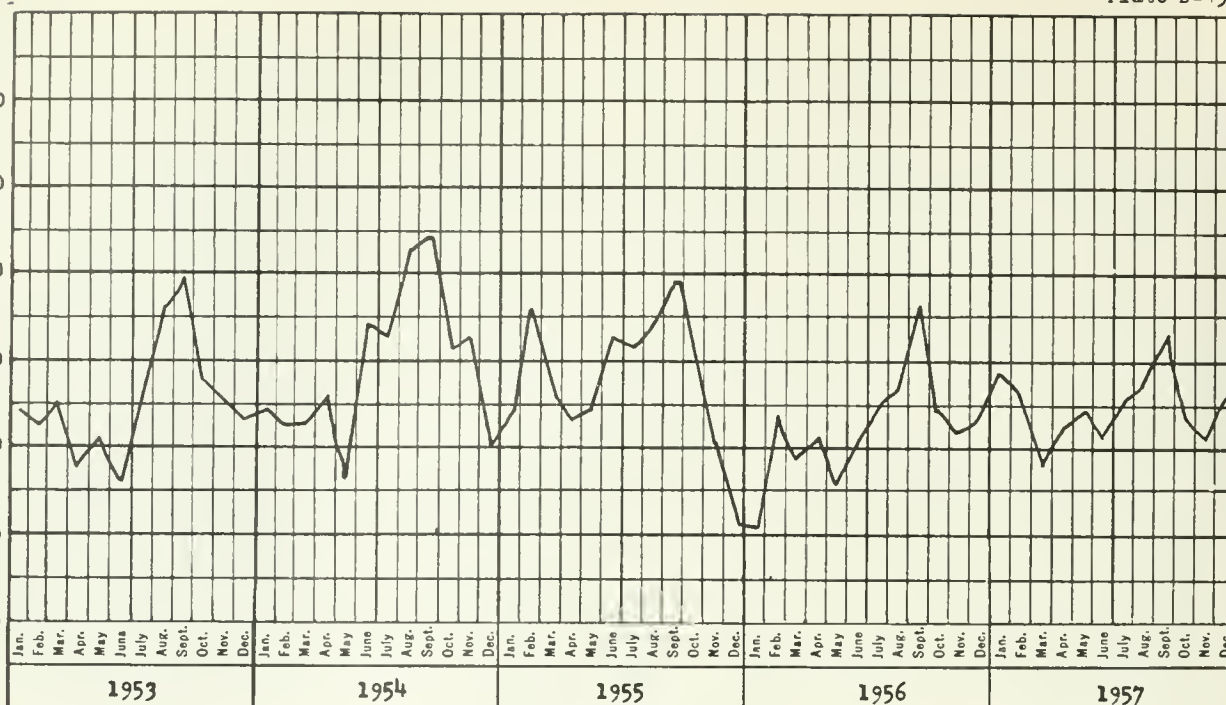


QUALITY CHARACTERISTICS  
OF  
SACRAMENTO RIVER AT RIO VISTA  
(STATION 16)



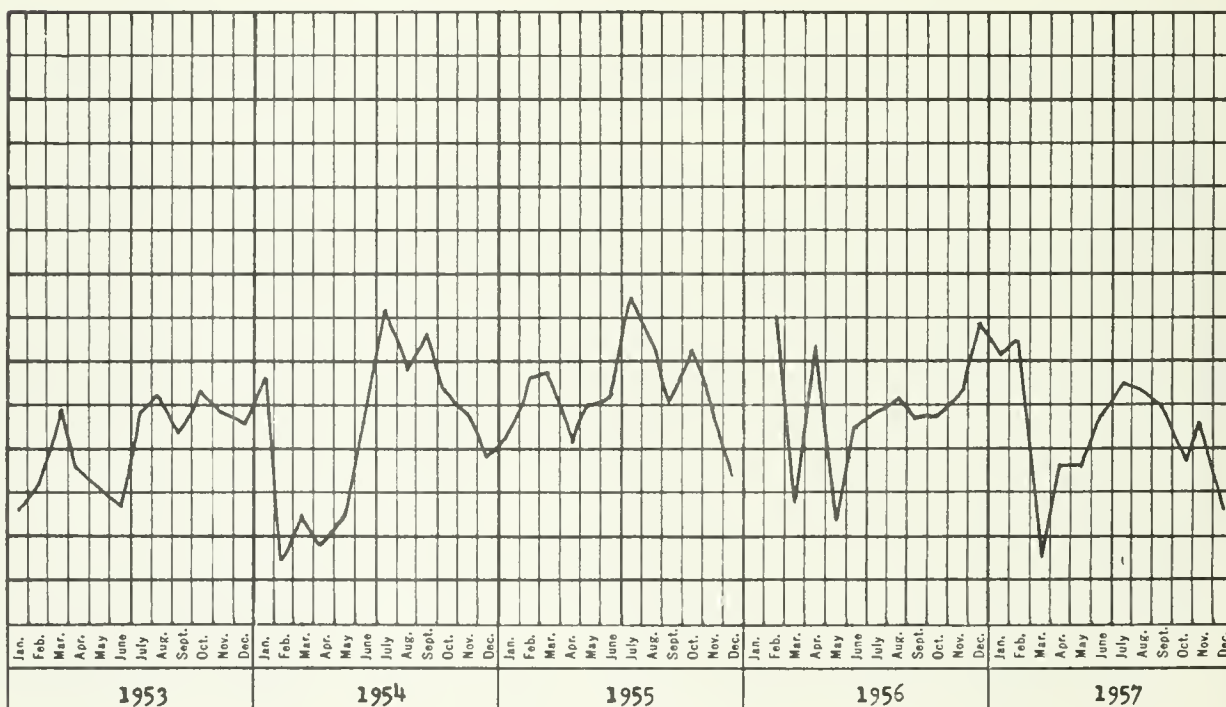
QUALITY CHARACTERISTICS  
OF  
SACRAMENTO RIVER AT SACRAMENTO  
(STATION 15)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



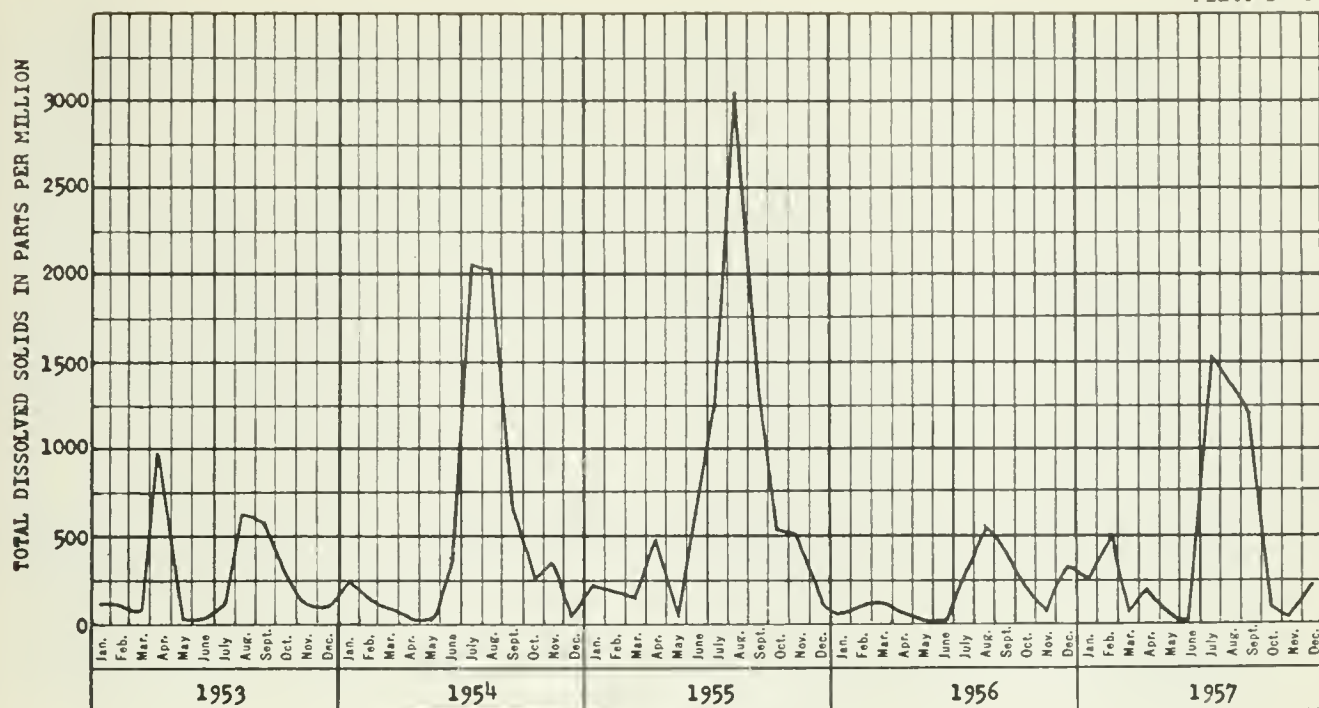
QUALITY CHARACTERISTICS  
OF  
SACRAMENTO RIVER AT SNODGRASS SLOUGH  
(STATION 97)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION

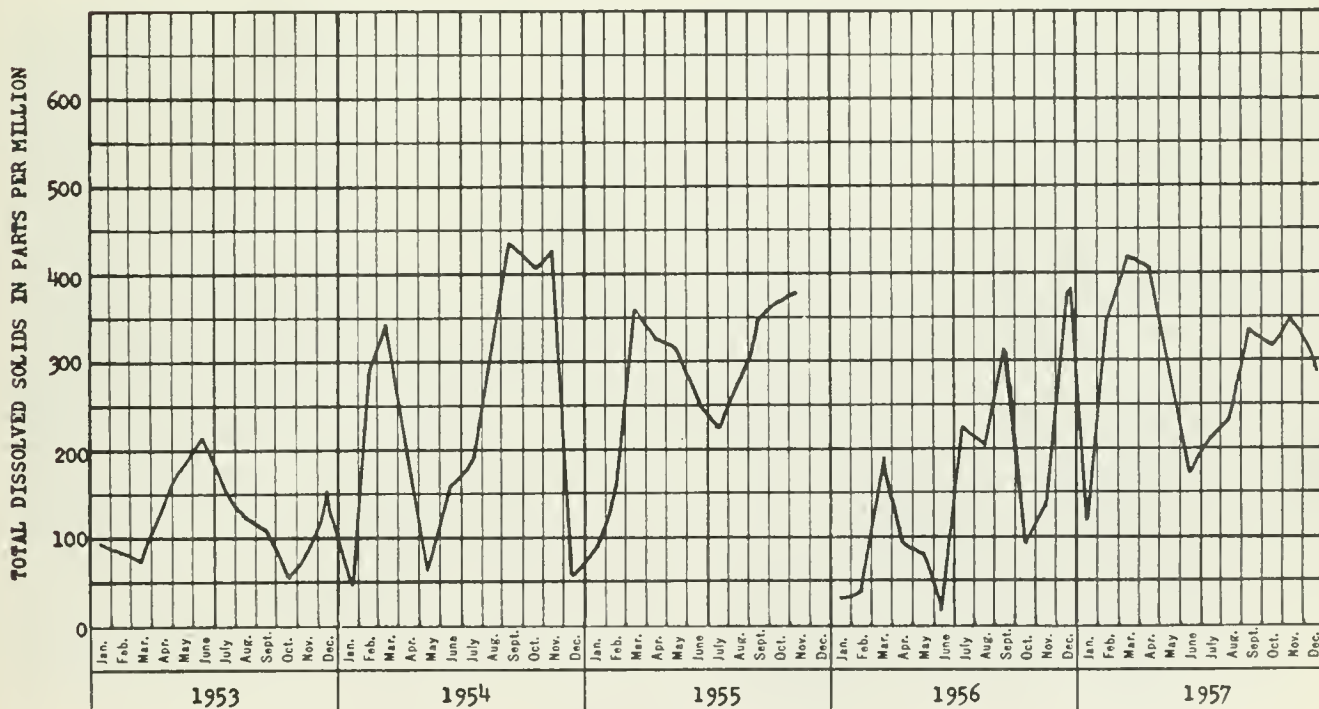


QUALITY CHARACTERISTICS  
OF  
SACRAMENTO SLOUGH NEAR KNIGHTS LANDING  
(STATION 14A)



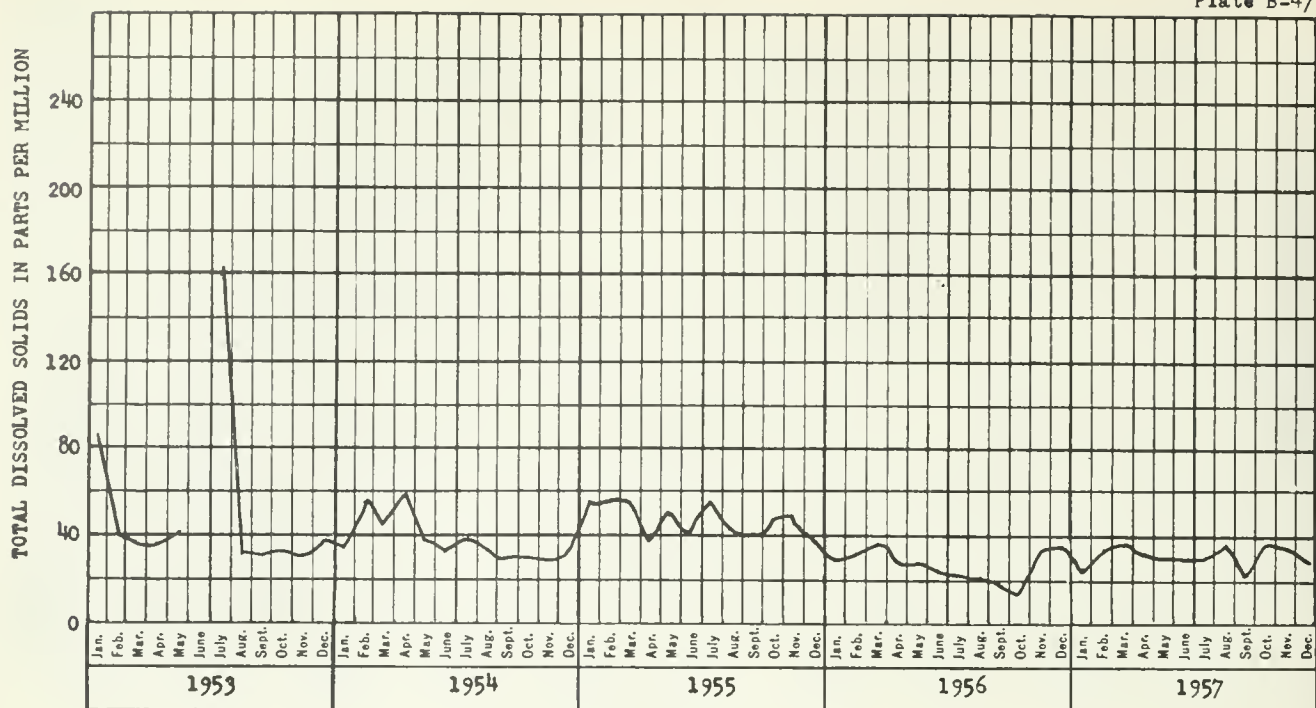


QUALITY CHARACTERISTICS  
OF  
SAN JOAQUIN RIVER AT ANTIOCH  
(STATION 28)

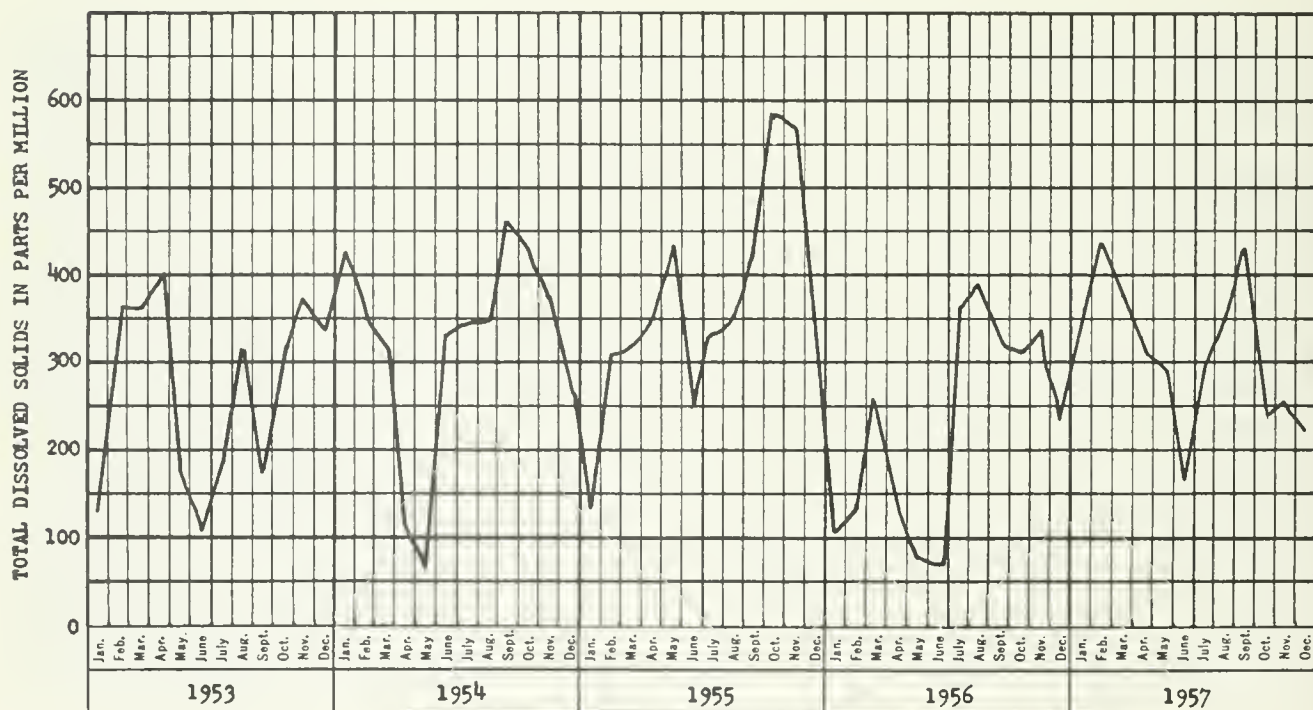


QUALITY CHARACTERISTICS  
OF  
SAN JOAQUIN RIVER NEAR DOS PALOS  
(STATION 25A)

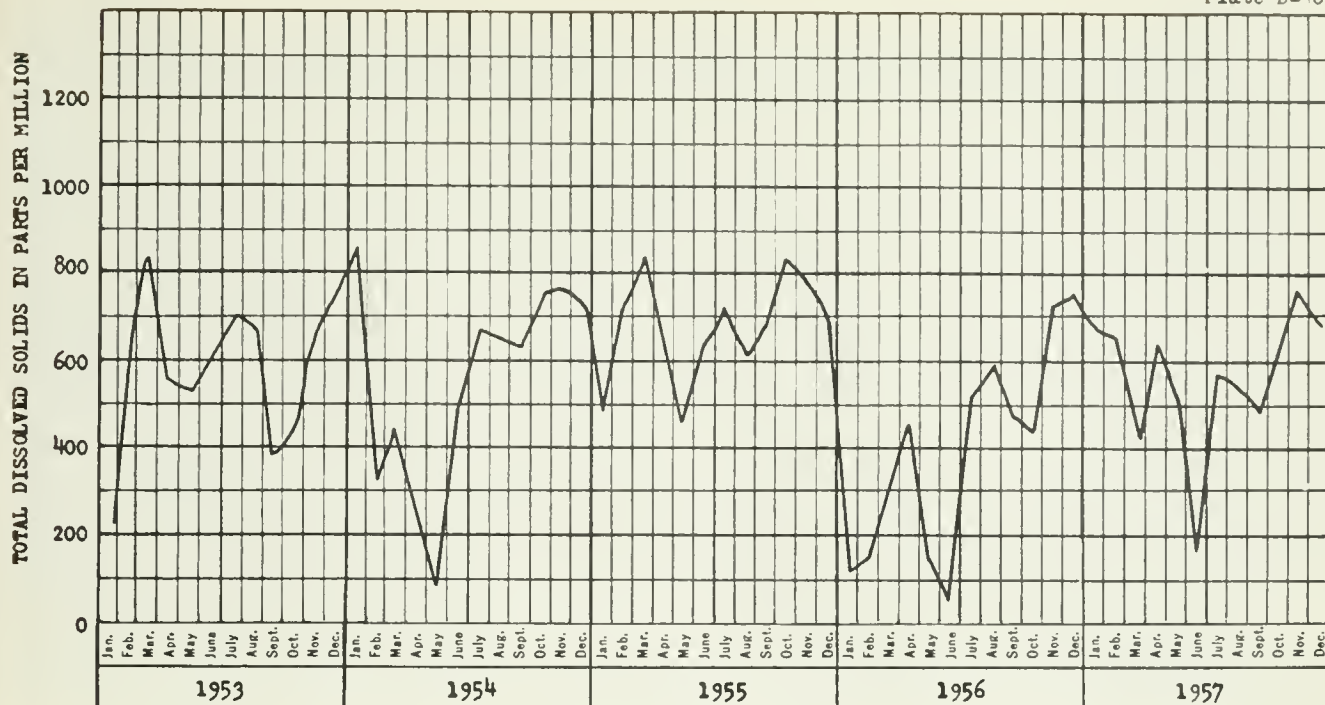




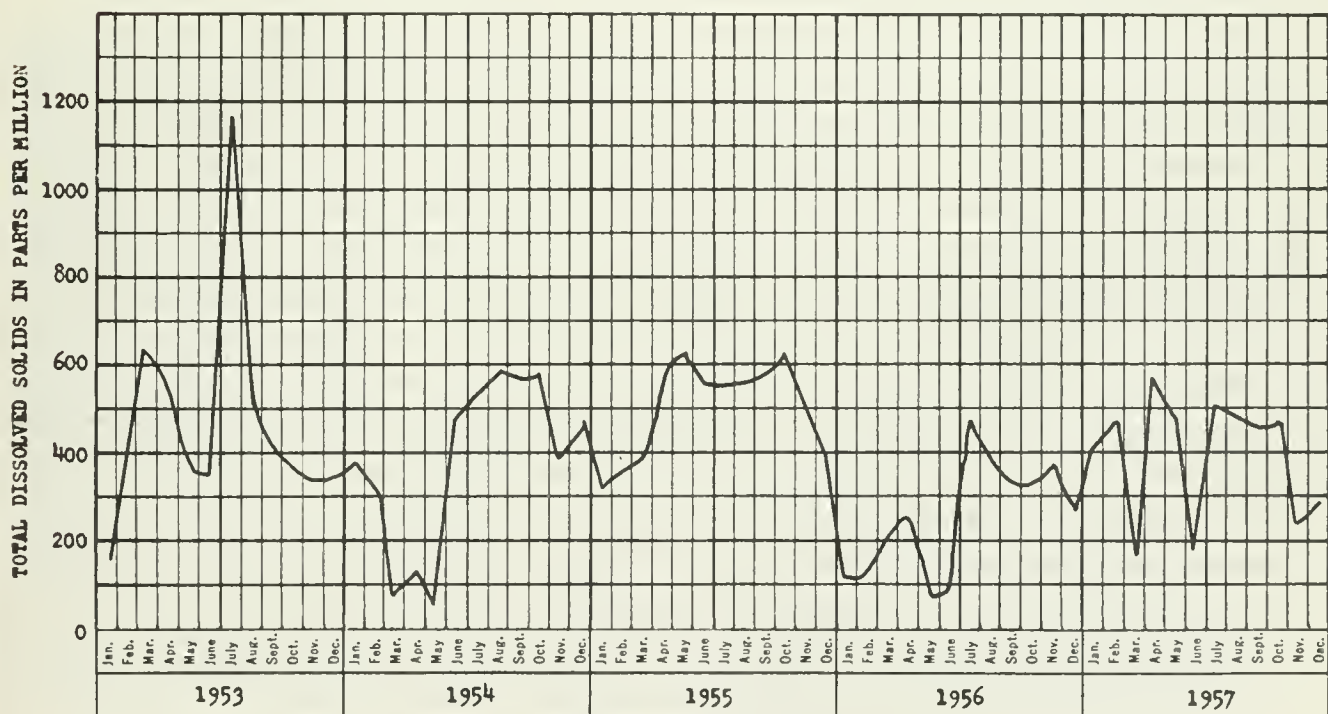
QUALITY CHARACTERISTICS  
OF  
SAN JOAQUIN RIVER AT FRIANT  
(STATION 24)



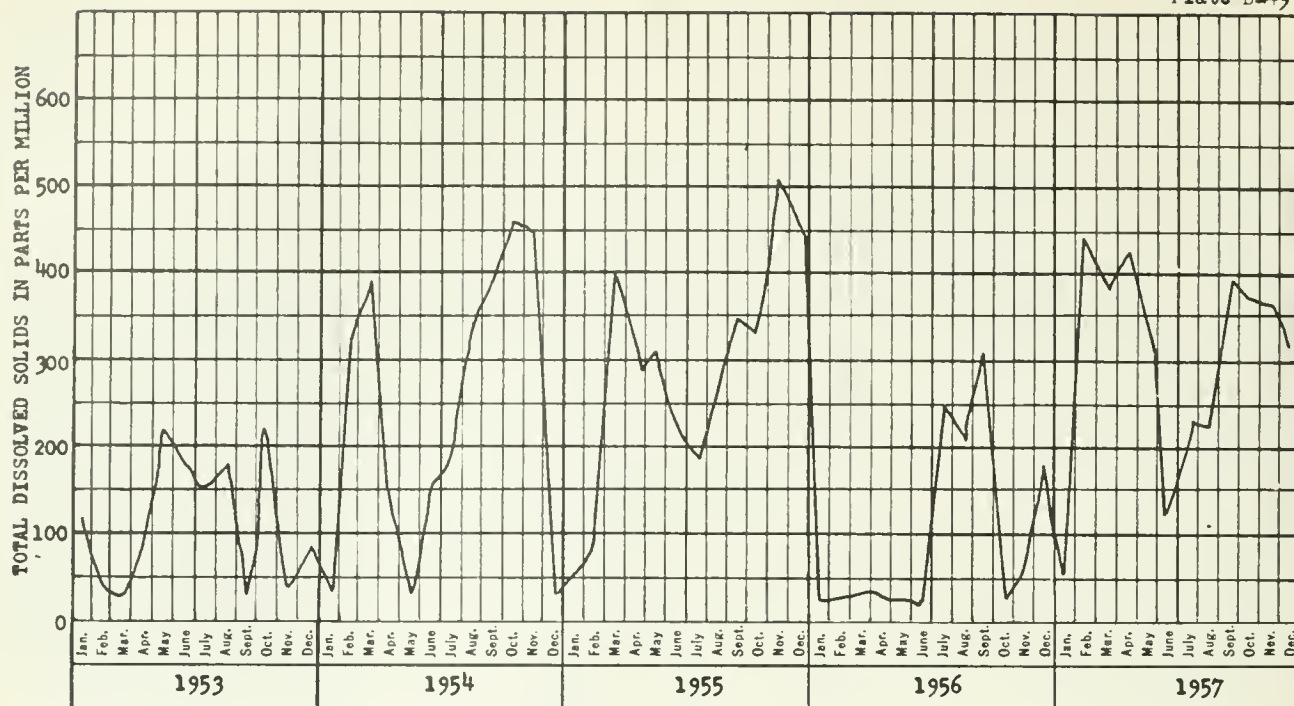
QUALITY CHARACTERISTICS  
OF  
SAN JOAQUIN RIVER AT OARWOOD BRIDGE  
(STATION 101)



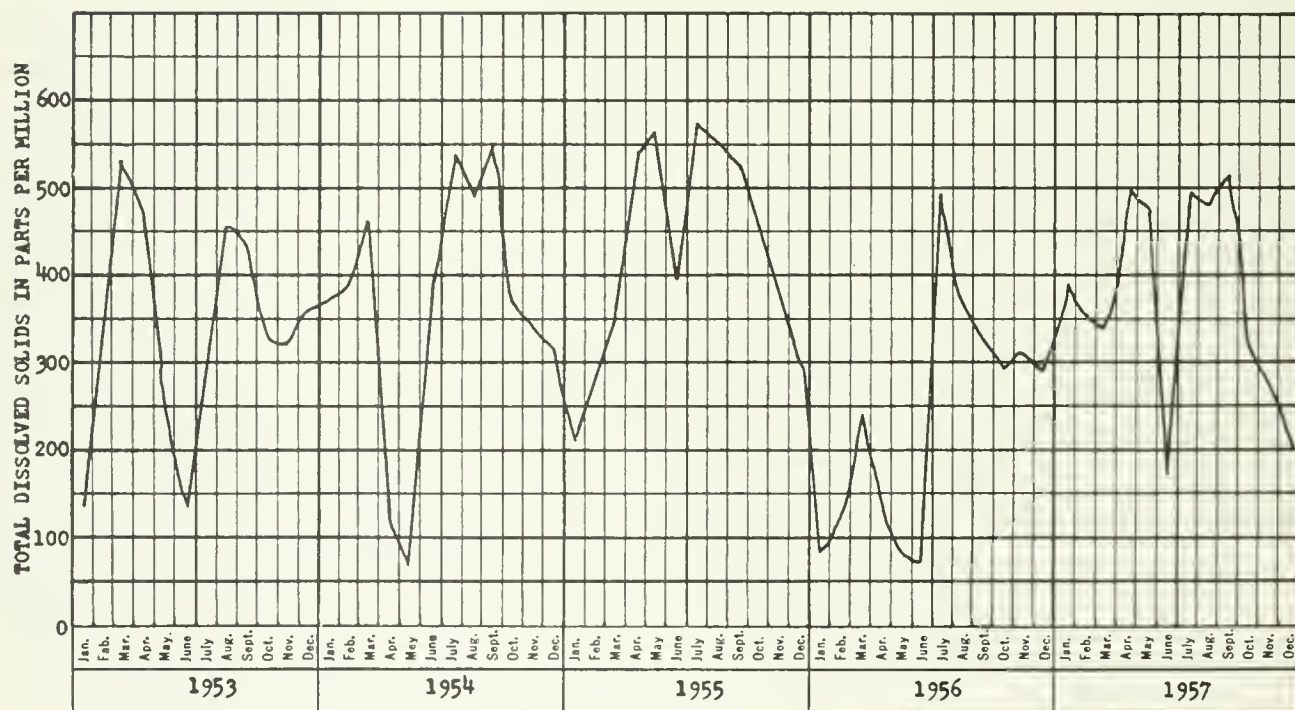
QUALITY CHARACTERISTICS  
OF  
SAN JOAQUIN RIVER NEAR GRAYSON  
(STATION 26)



QUALITY CHARACTERISTICS  
OF  
SAN JOAQUIN RIVER AT MAZE ROAD BRIDGE  
(STATION 26A)

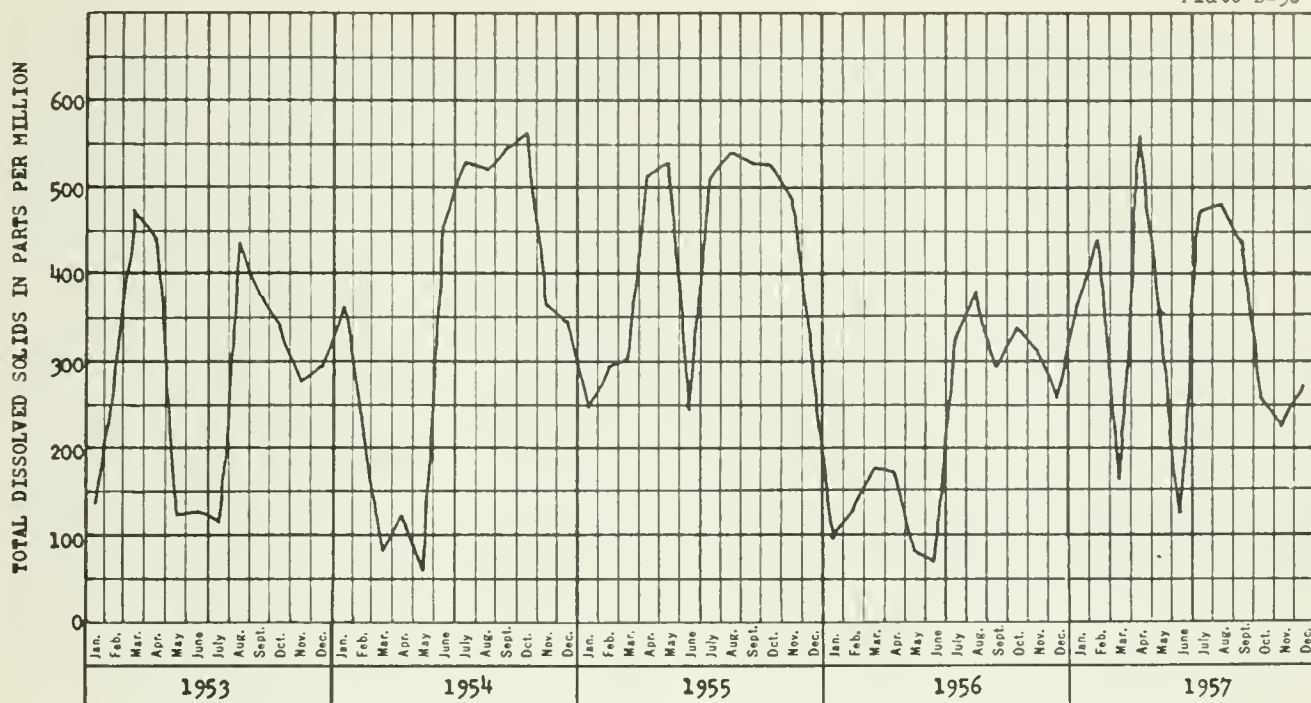


QUALITY CHARACTERISTICS  
OF  
SAN JOAQUIN RIVER NEAR MENDOTA  
(STATION 25)

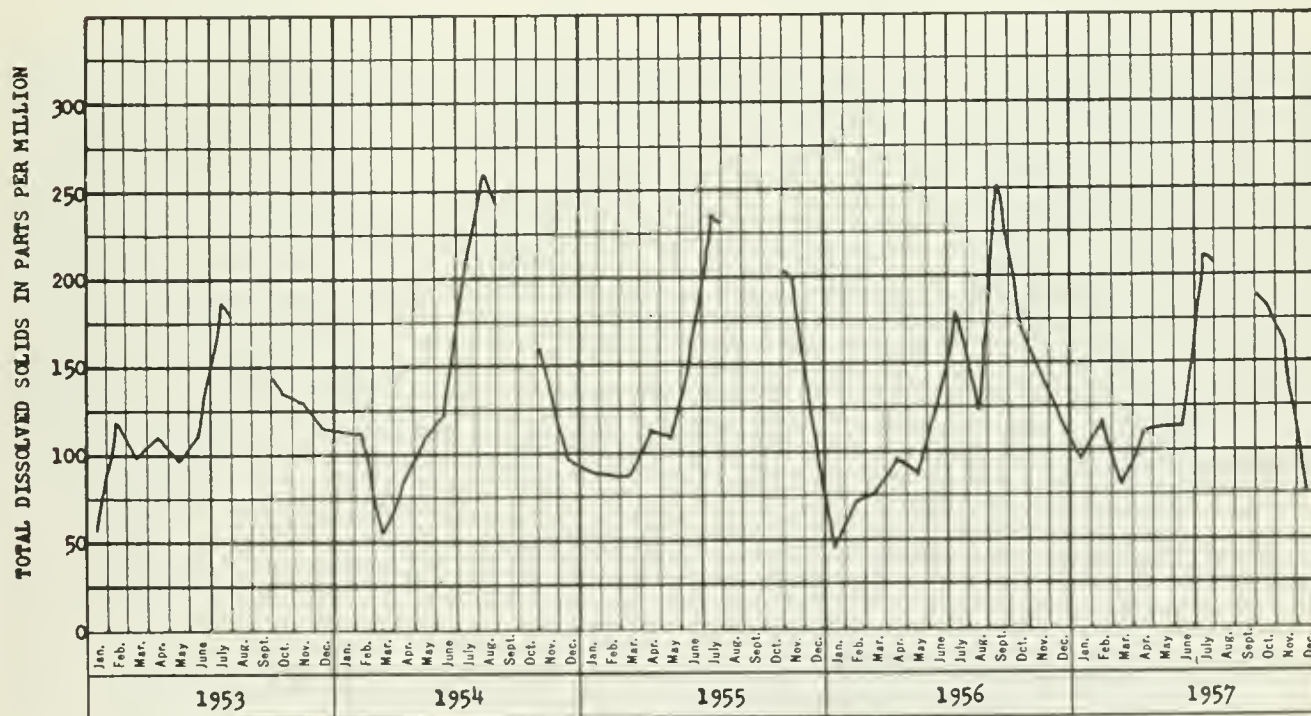


QUALITY CHARACTERISTICS  
OF  
SAN JOAQUIN RIVER AT MOSSDALE BRIDGE  
(STATION 102)



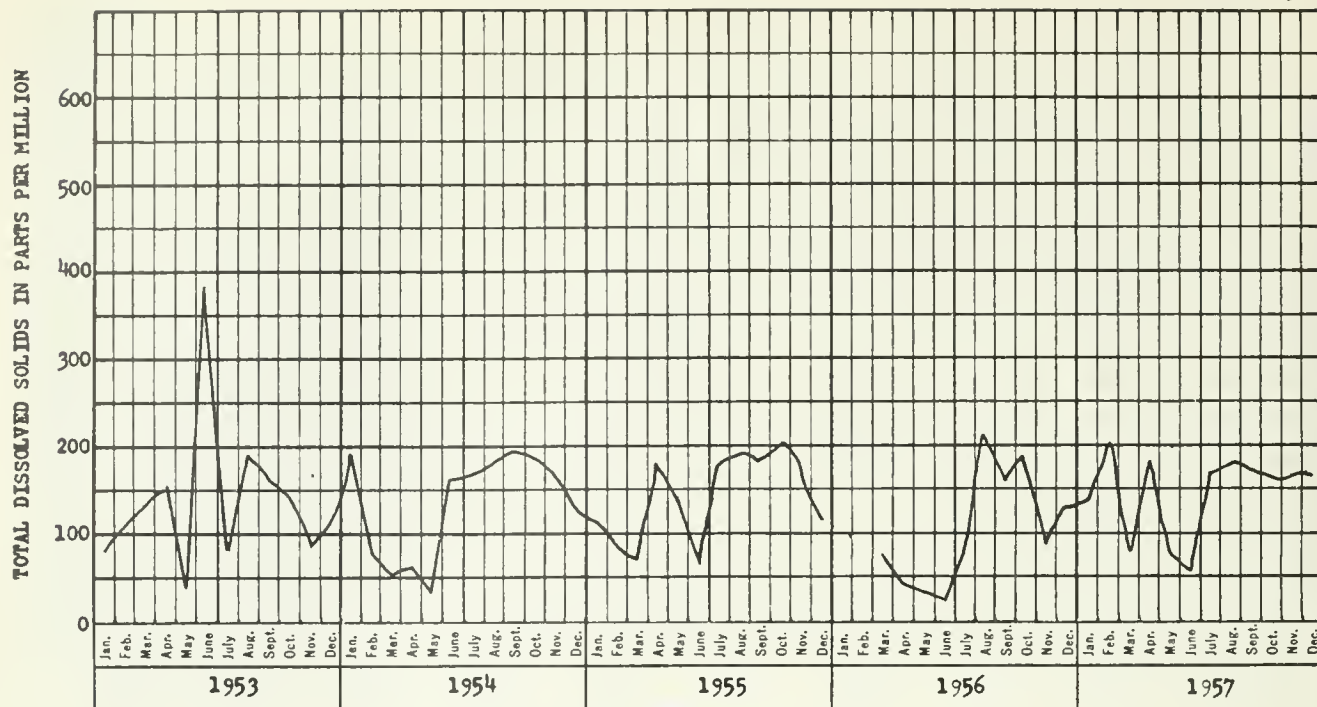


QUALITY CHARACTERISTICS  
OF  
SAN JOAQUIN RIVER NEAR VERNALIS  
(STATION 27)

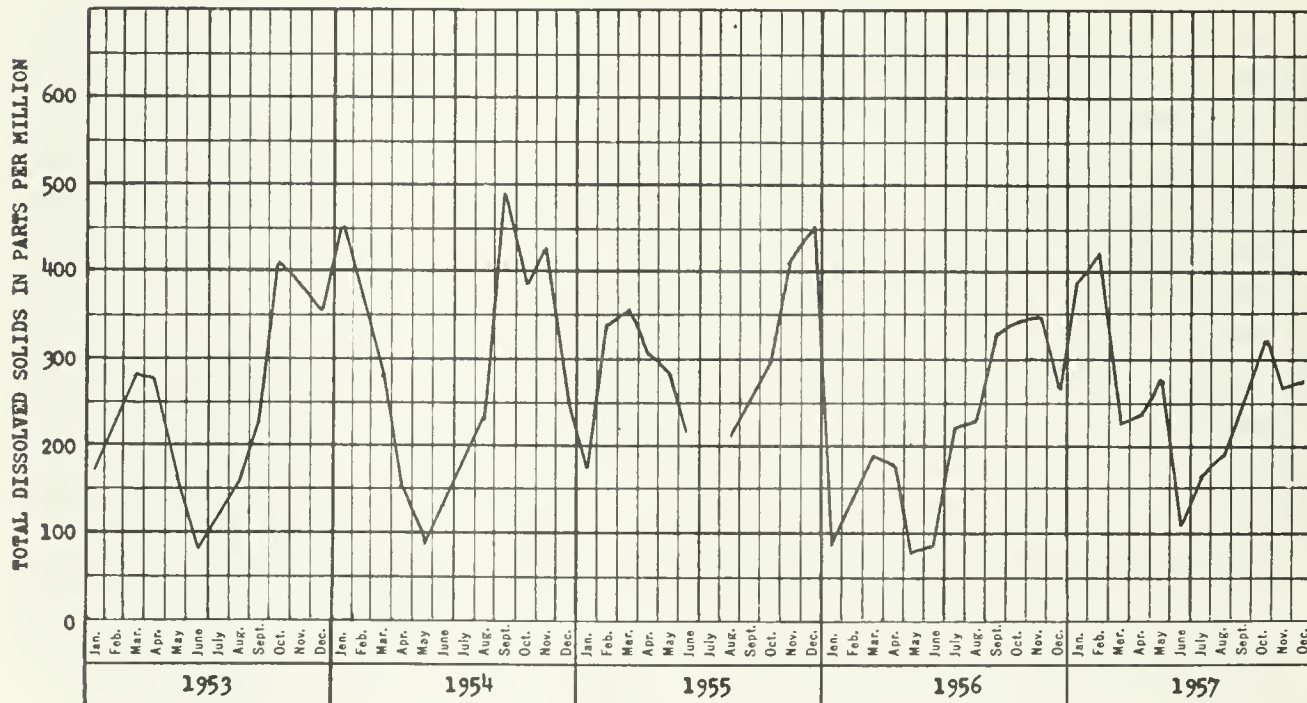


QUALITY CHARACTERISTICS  
OF  
SOUTH HONCUT CREEK NEAR BANGOR  
(STATION 90)

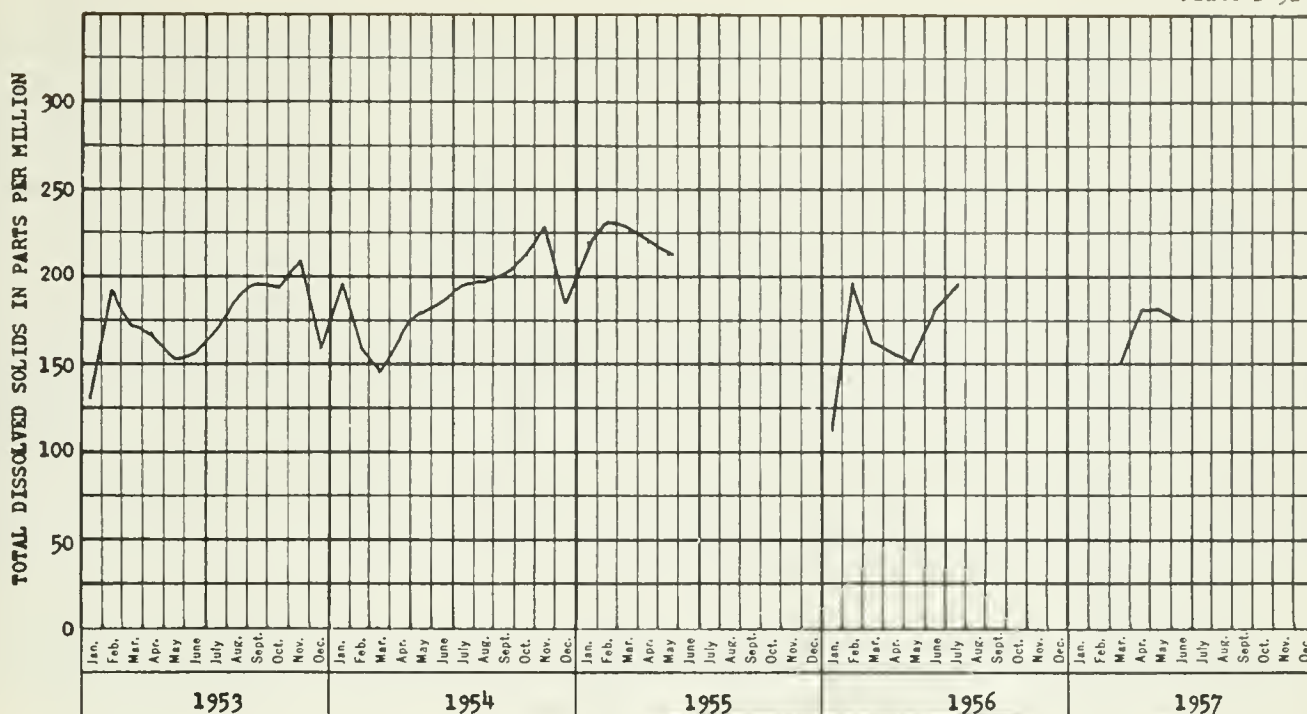




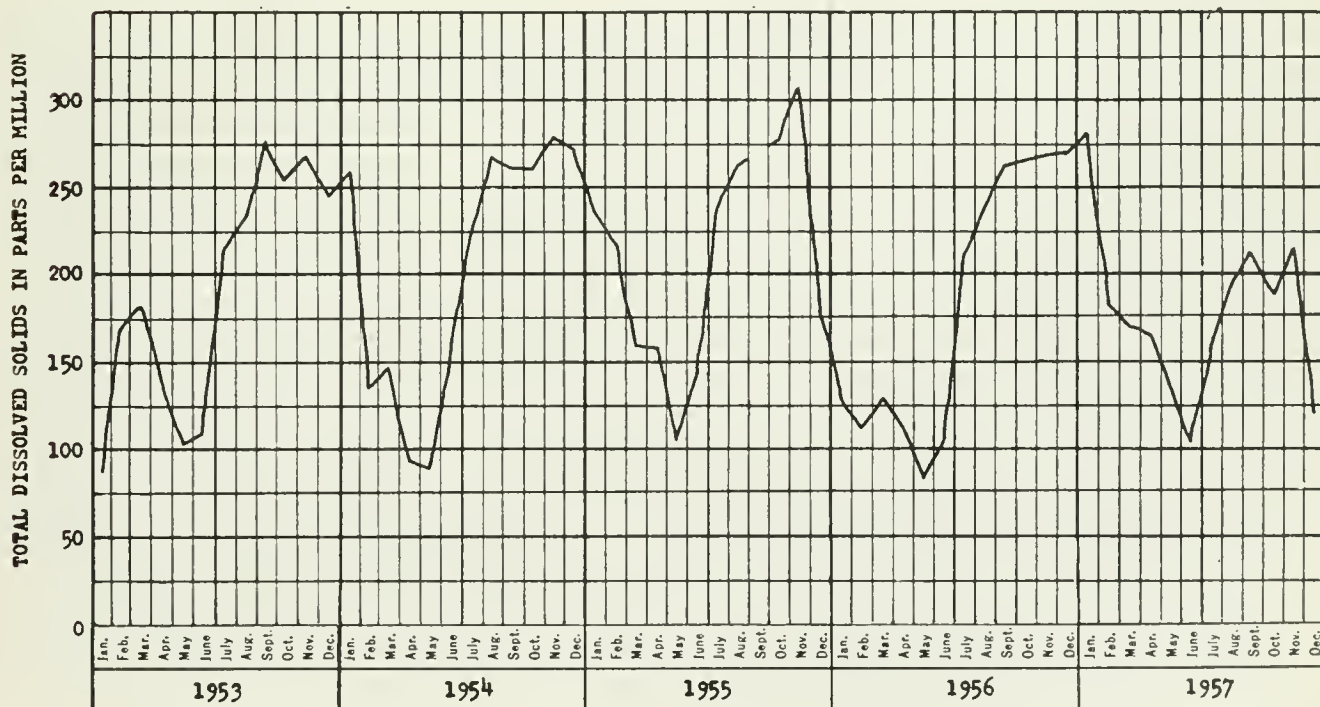
QUALITY CHARACTERISTICS  
OF  
STANISLAUS RIVER NEAR MOUTH  
(STATION 29)



QUALITY CHARACTERISTICS  
OF  
STOCKTON SHIP CHANNEL AT RINDGE ISLAND  
(STATION 100)

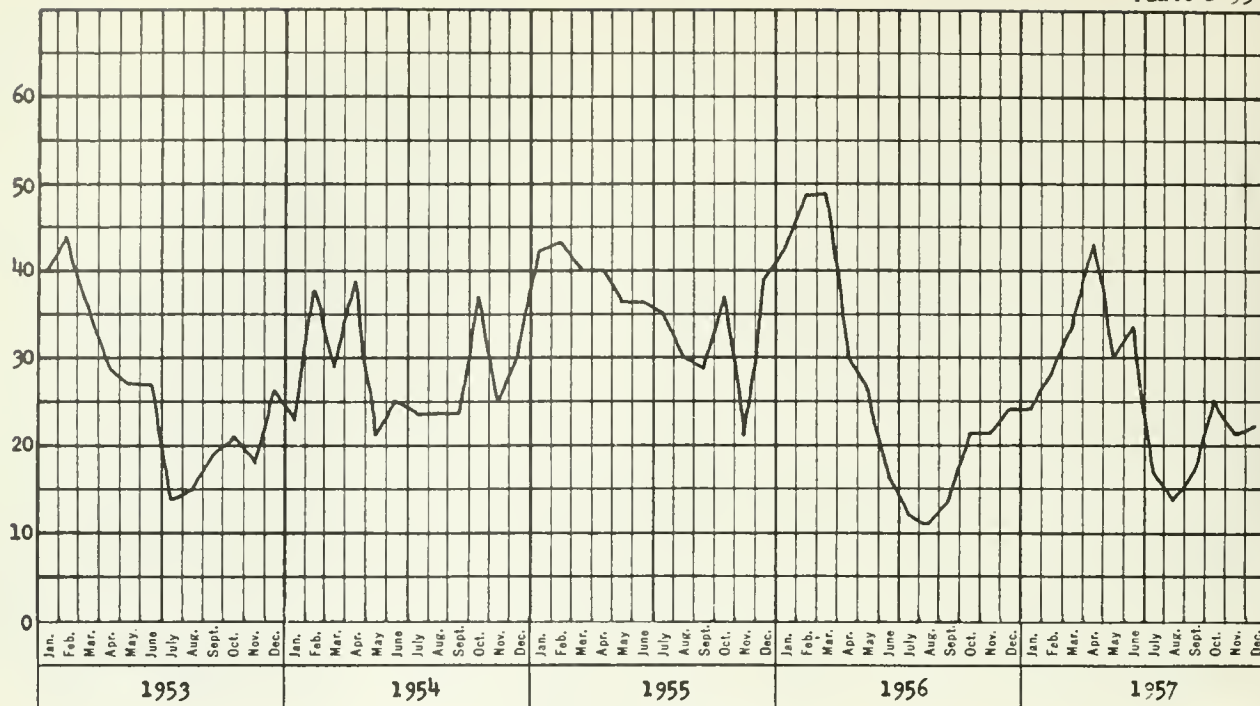


QUALITY CHARACTERISTICS  
OF  
STONY CREEK NEAR HAMILTON CITY  
(STATION 13A)



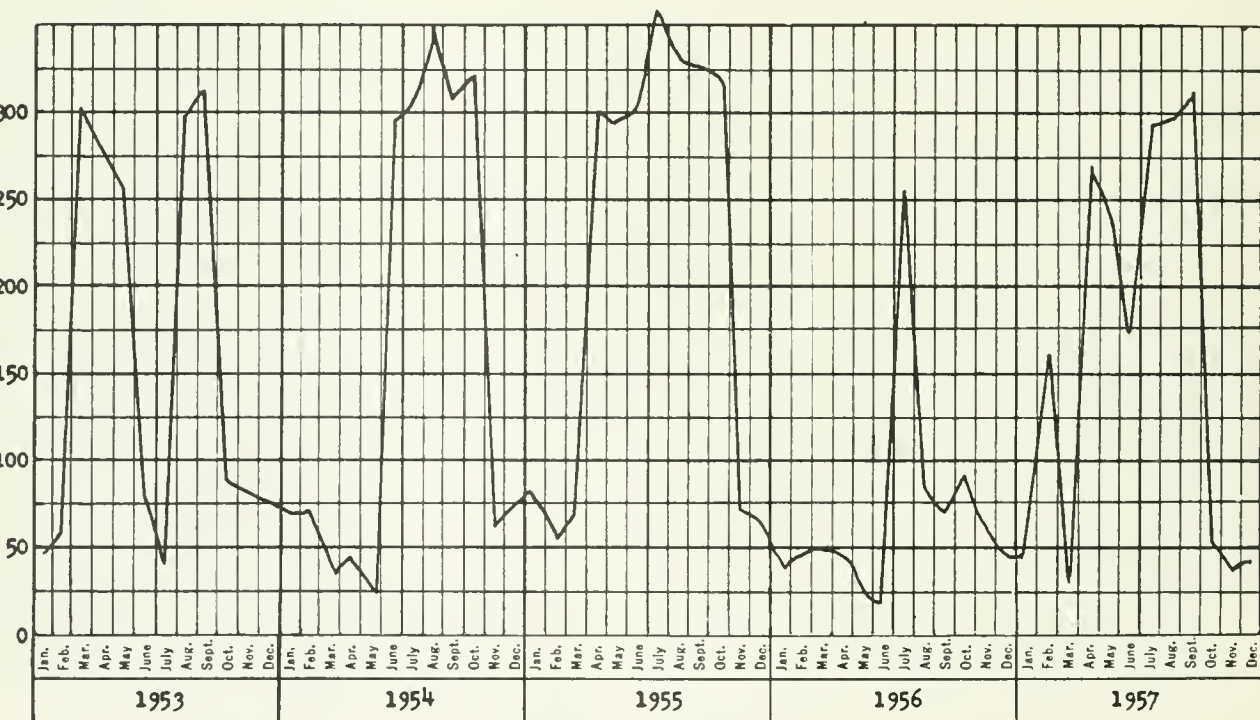
QUALITY CHARACTERISTICS  
OF  
TULE RIVER NEAR PORTERVILLE  
(STATION 91)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



QUALITY CHARACTERISTICS  
OF  
TUOLUMNE RIVER BELOW DON PEDRO DAM  
(STATION 31A)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION

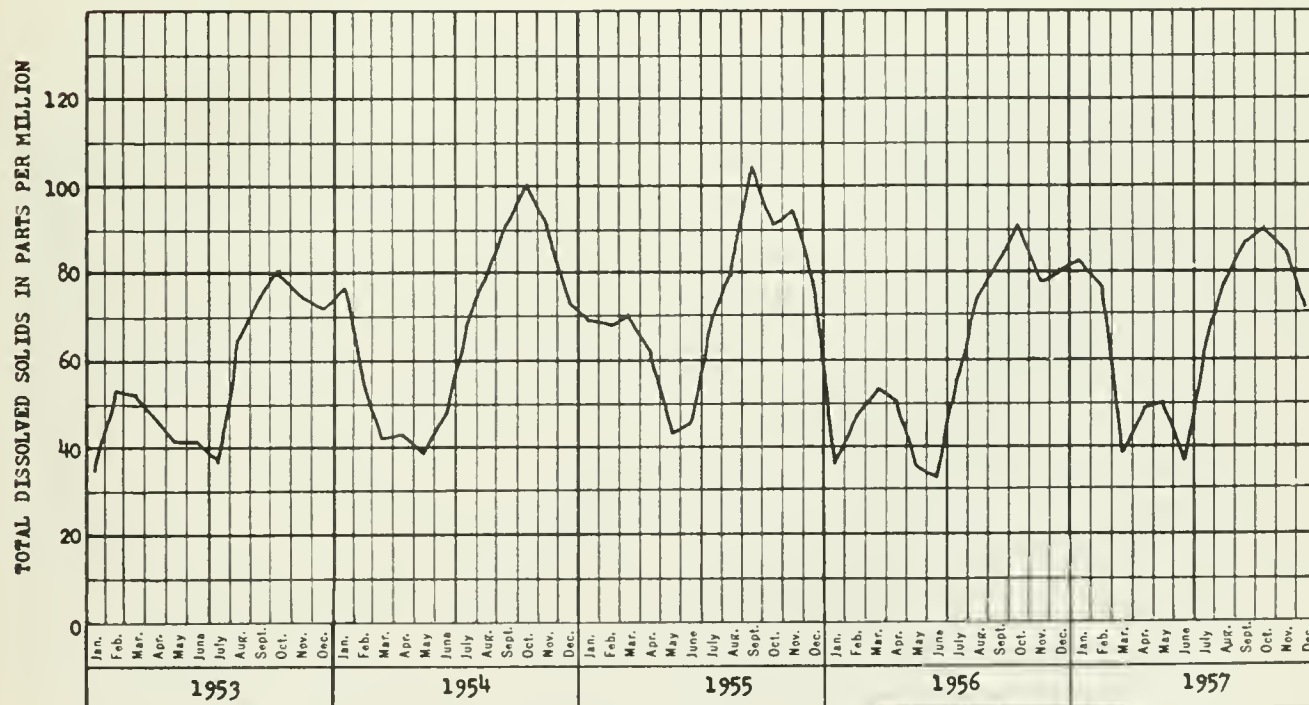


QUALITY CHARACTERISTICS  
OF  
TUOLUMNE RIVER AT HICKMAN-WATERFORD BRIDGE  
(STATION 30A.)





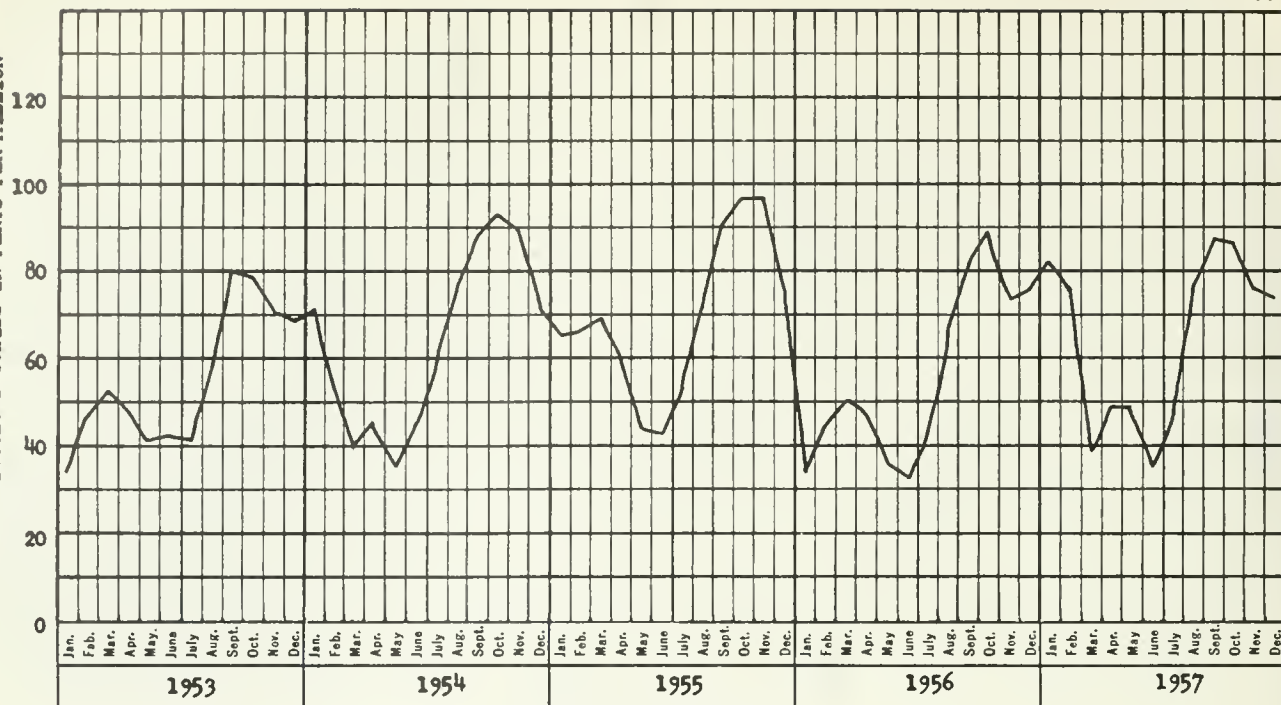
QUALITY CHARACTERISTICS  
OF  
TUOLUMNE RIVER AT TUOLUMNE CITY  
(STATION 31)



QUALITY CHARACTERISTICS  
OF  
YUBA RIVER AT MARYSVILLE  
(STATION 21)

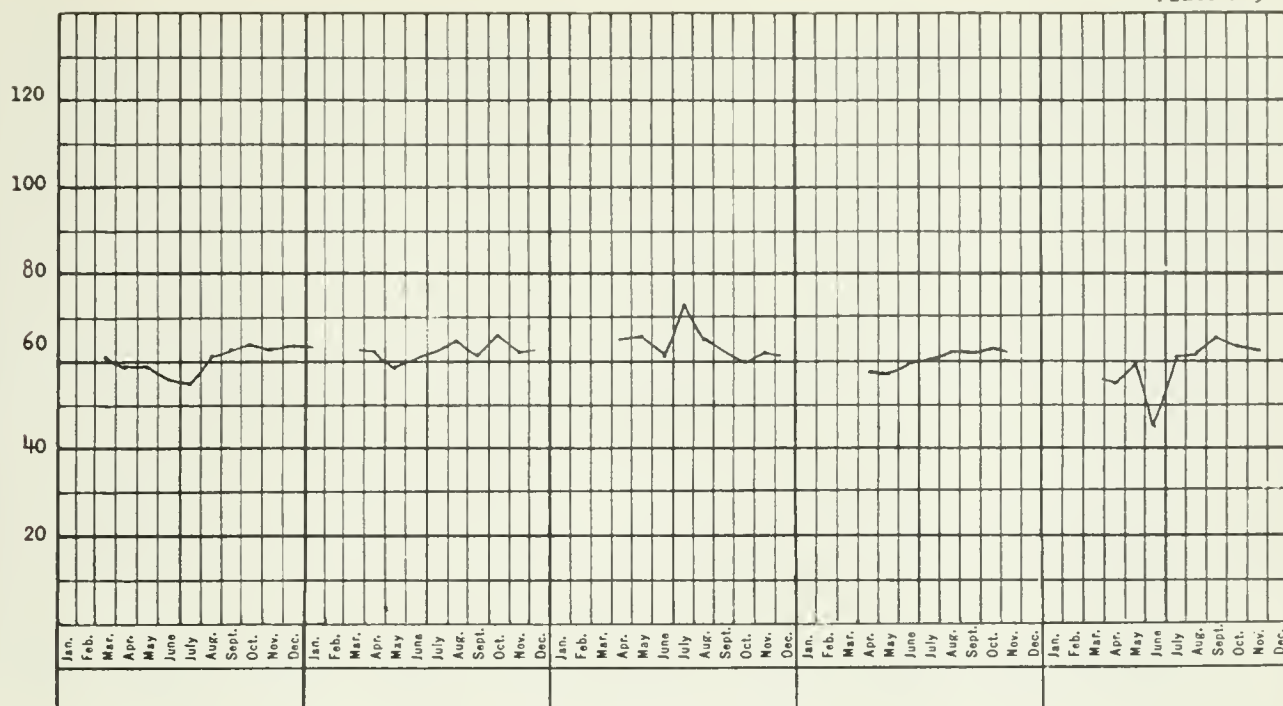


TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



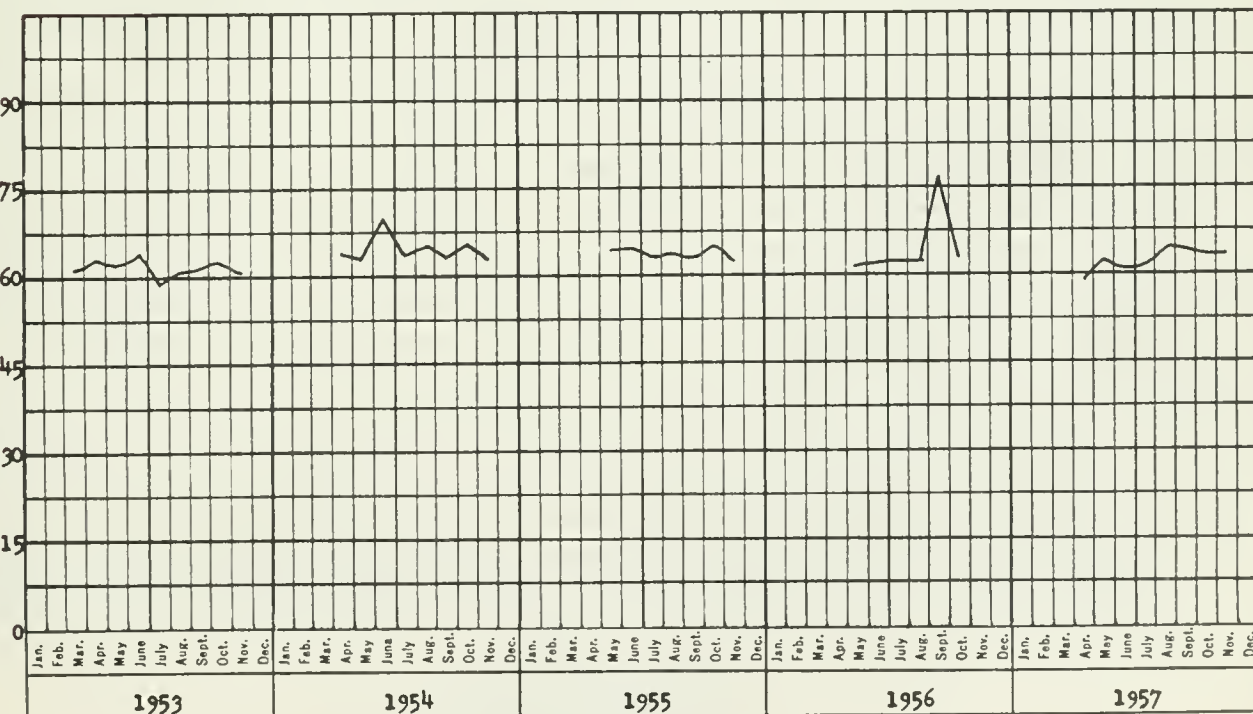
QUALITY CHARACTERISTICS  
OF  
YUBA RIVER NEAR SMARTVILLE  
(STATION 21A)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



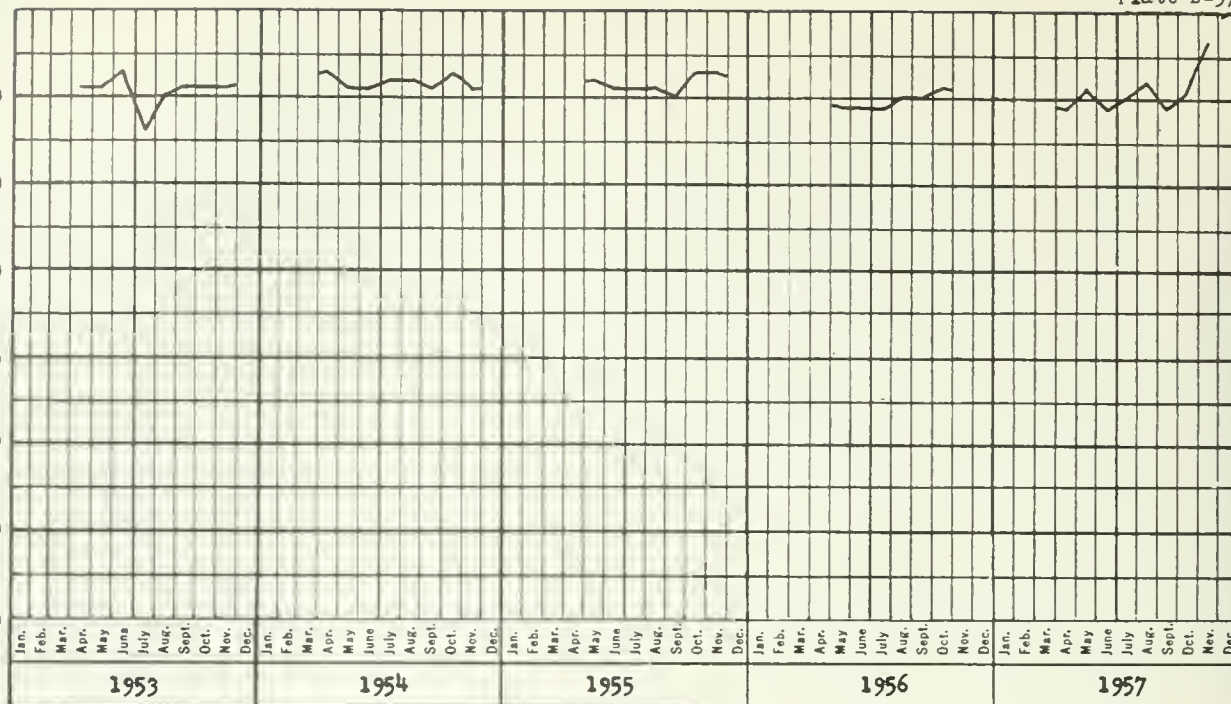
QUALITY CHARACTERISTICS  
OF  
LAKE TAHOE AT BIJOU  
(STATION 39)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



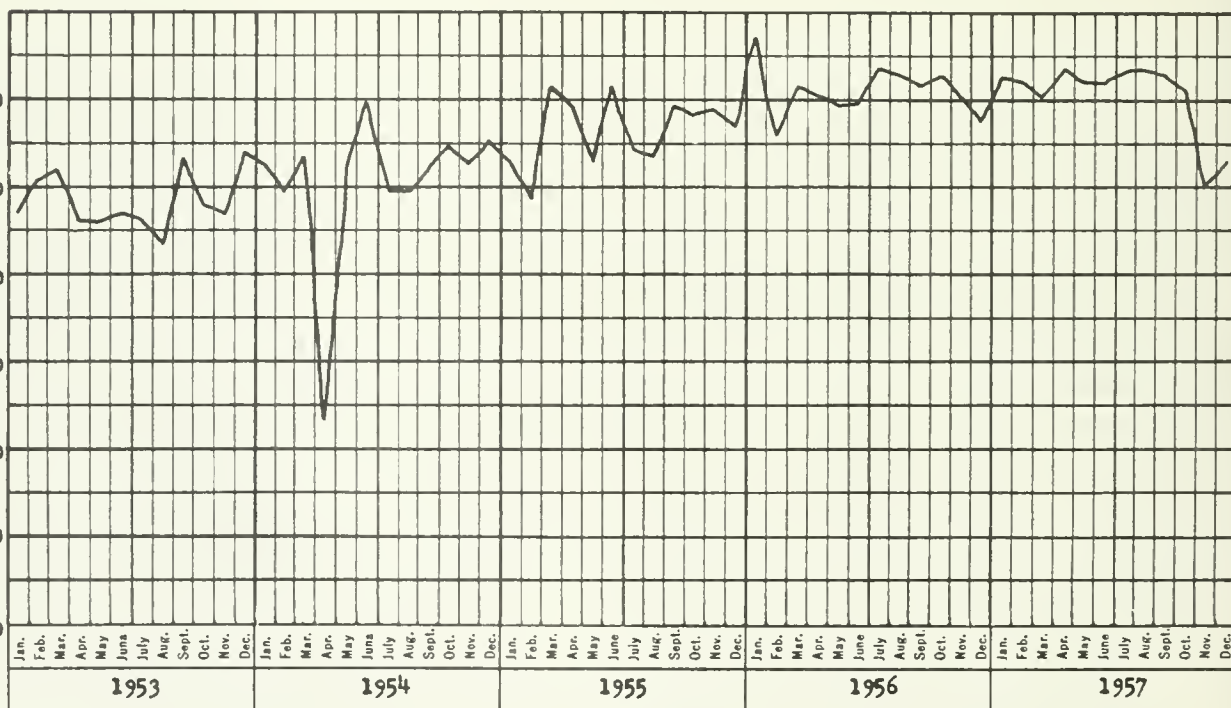
QUALITY CHARACTERISTICS  
OF  
LAKE TAHOE AT TAHOE CITY  
(STATION 38)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



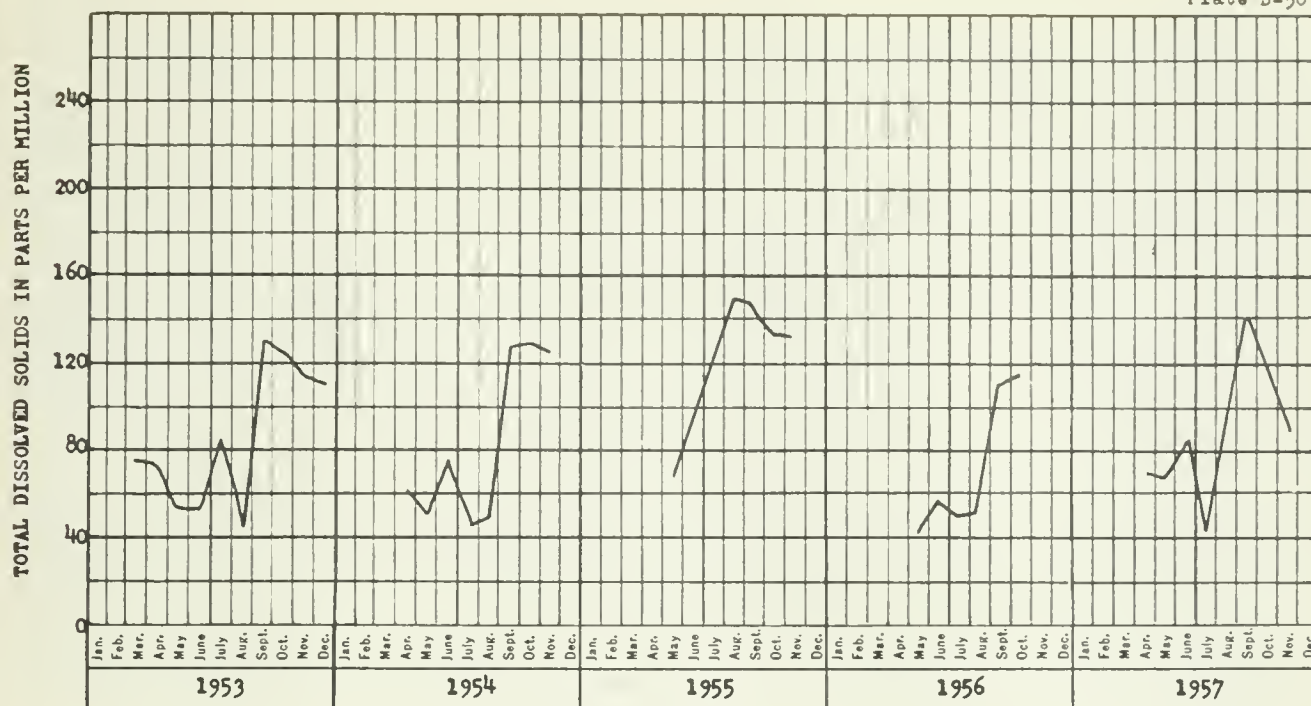
QUALITY CHARACTERISTICS  
OF  
LAKE TAHOE AT TAHOE VISTA  
(STATION 37)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION

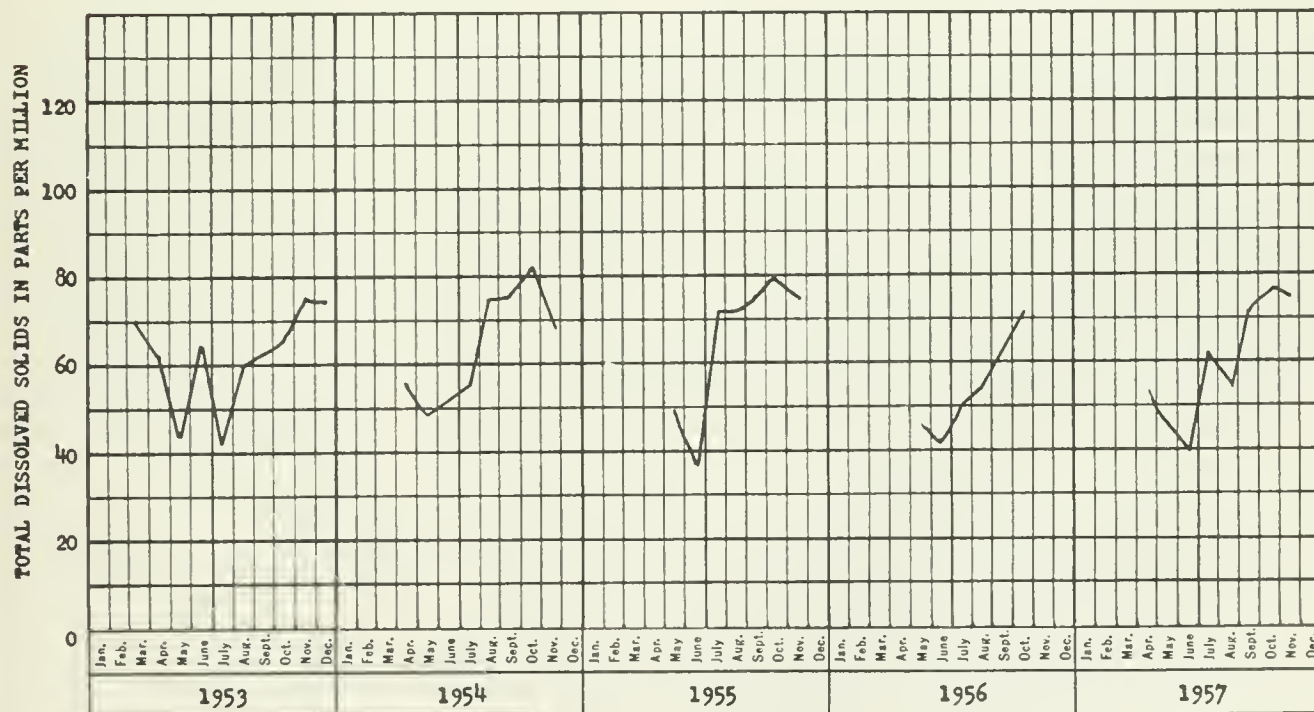


QUALITY CHARACTERISTICS  
OF  
MOJAVE RIVER NEAR VICTORVILLE  
(STATION 67)





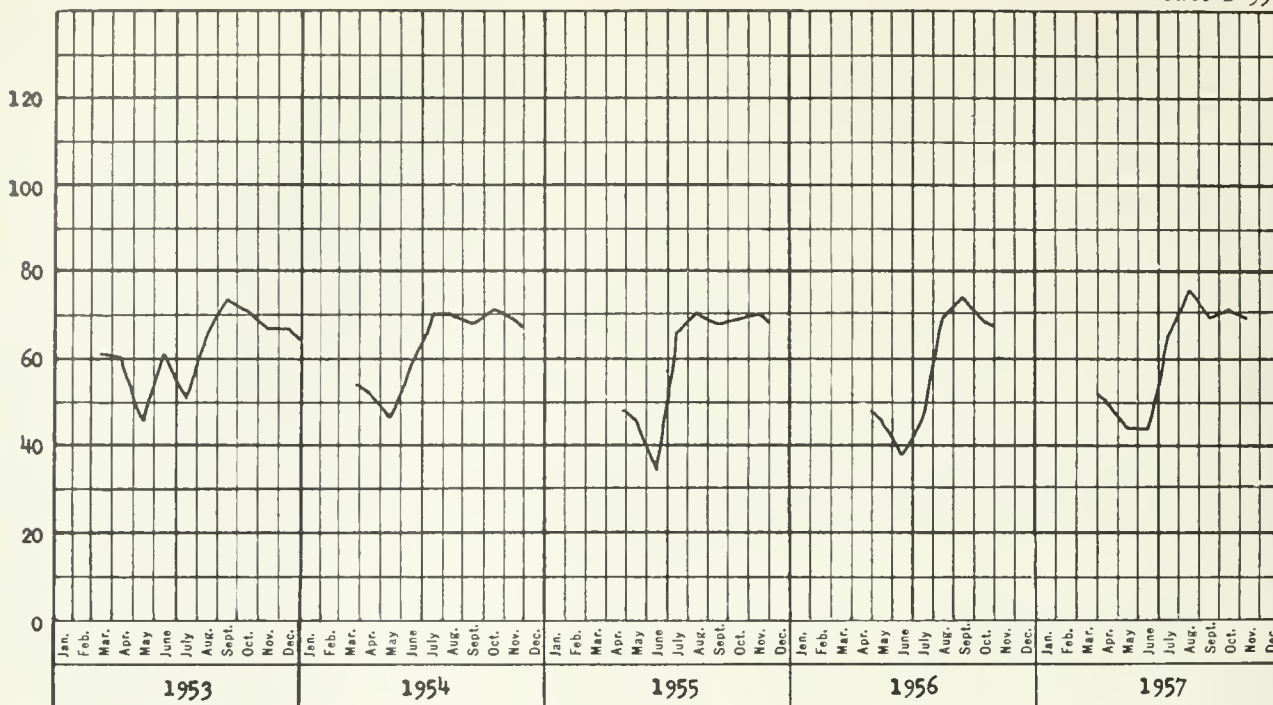
QUALITY CHARACTERISTICS  
OF  
SUSAN RIVER AT SUSANVILLE  
(STATION 17B)



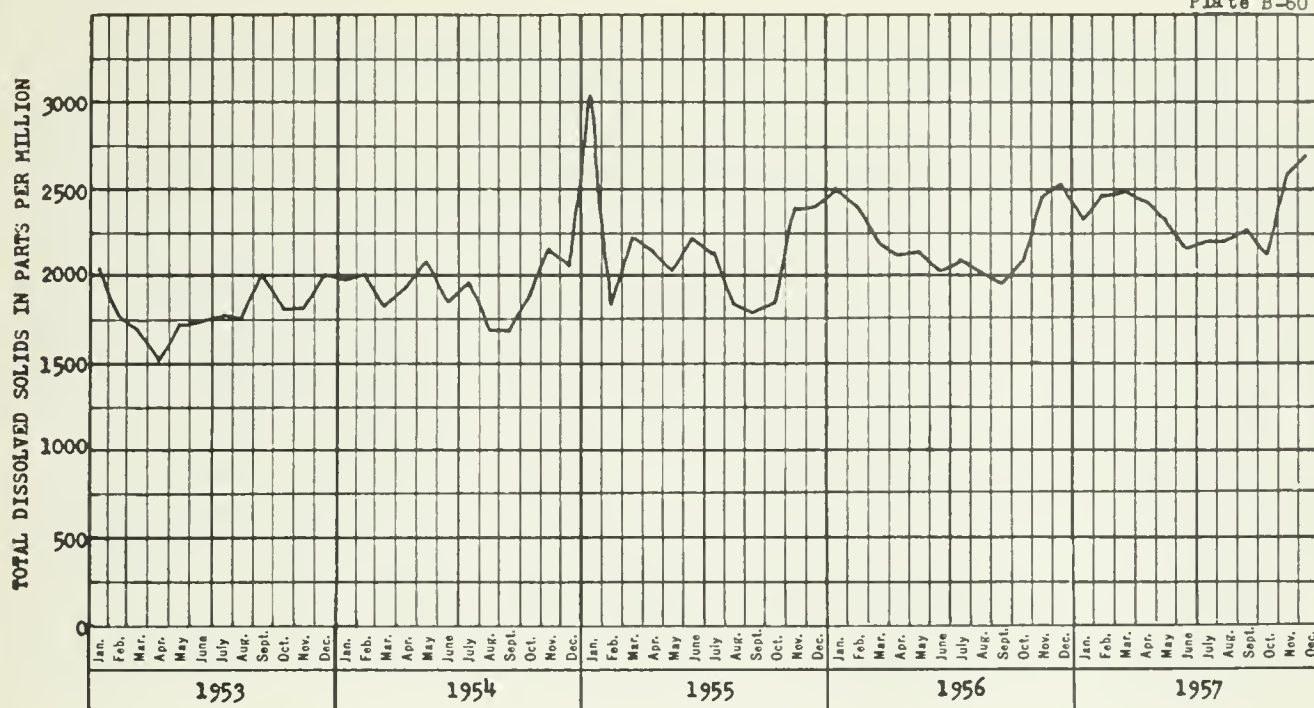
QUALITY CHARACTERISTICS  
OF  
TRUCKEE RIVER NEAR PARAD  
(STATION 53)



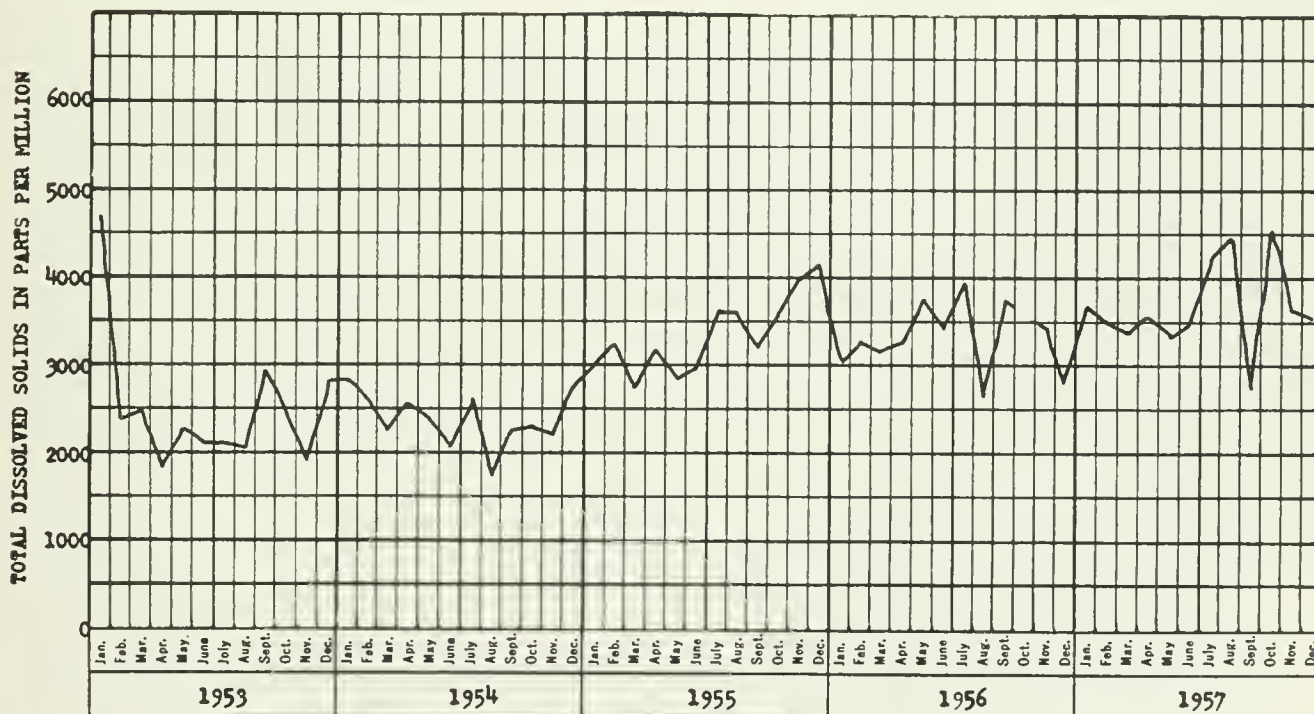
TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



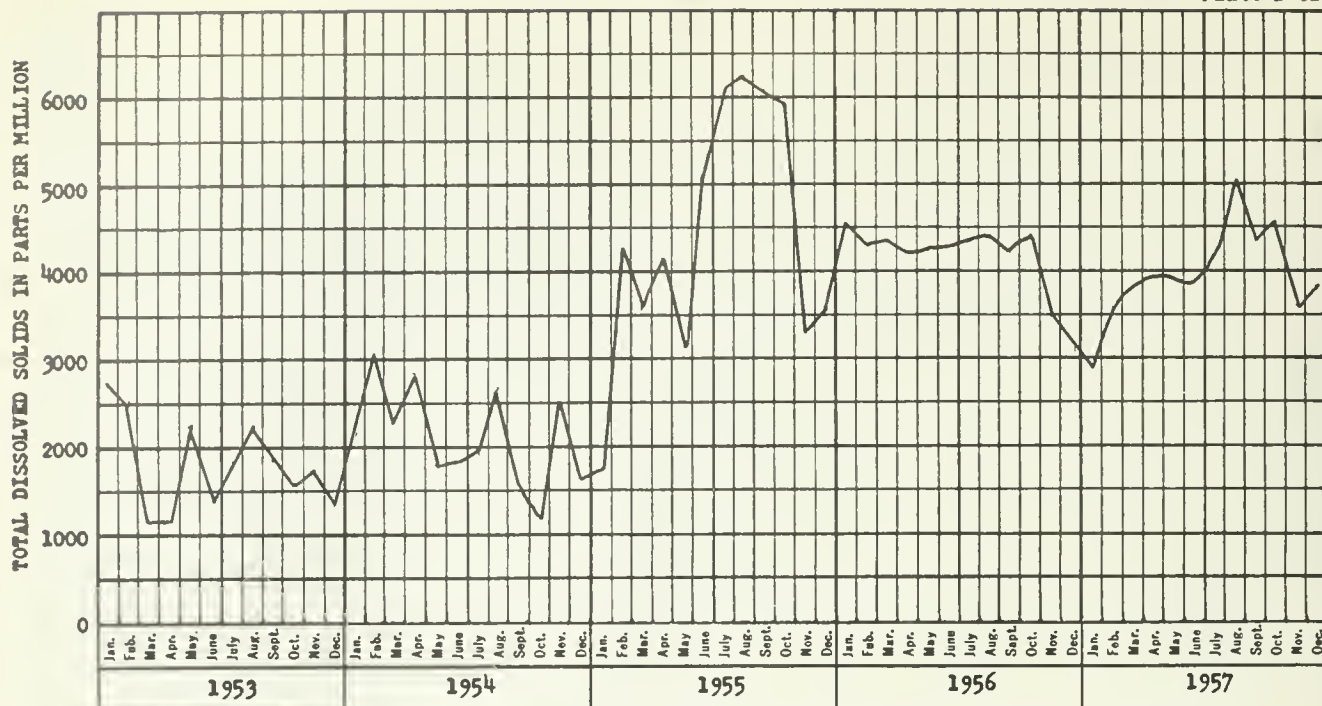
QUALITY CHARACTERISTICS  
OF  
TRUCKEE RIVER NEAR TRUCKEE  
(STATION 52)



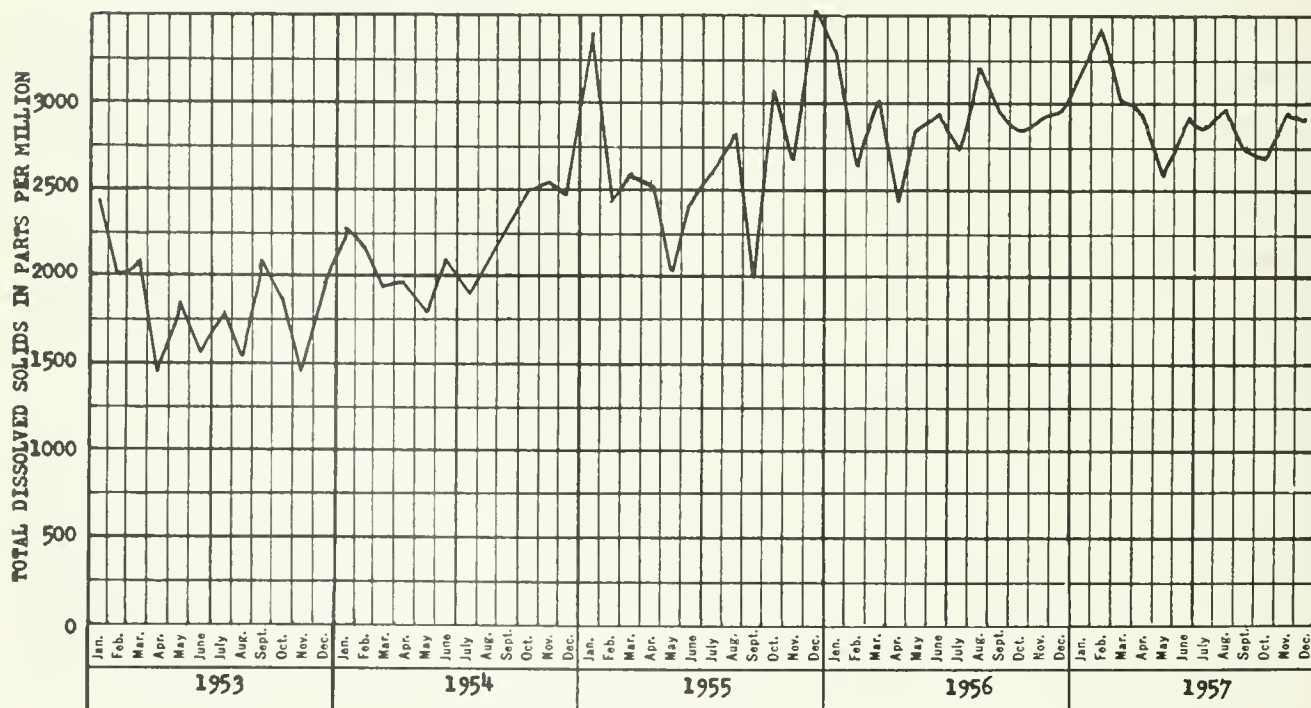
QUALITY CHARACTERISTICS  
OF  
ALAMO RIVER NEAR CALAPATRIA  
(STATION 60)



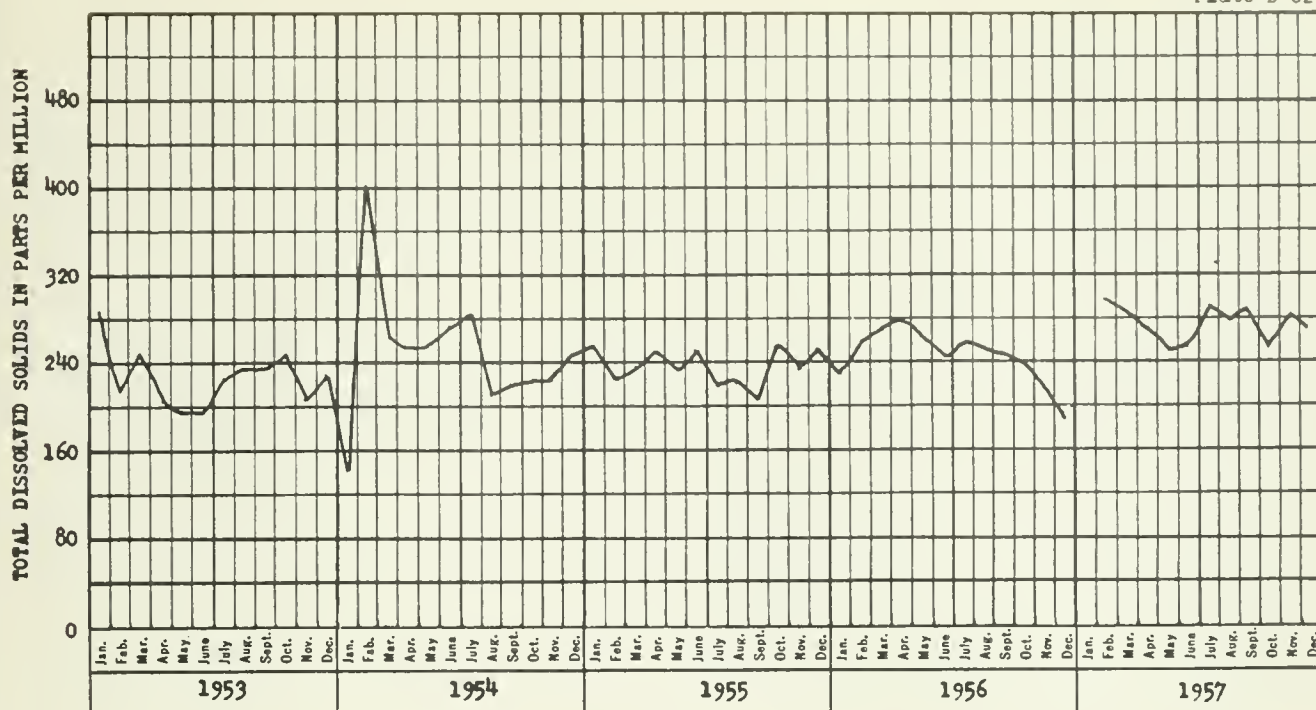
QUALITY CHARACTERISTICS  
OF  
ALAMO RIVER AT INTERNATIONAL BOUNDARY  
(STATION 59)



QUALITY CHARACTERISTICS  
OF  
NEW RIVER AT INTERNATIONAL BOUNDARY  
(STATION 57)



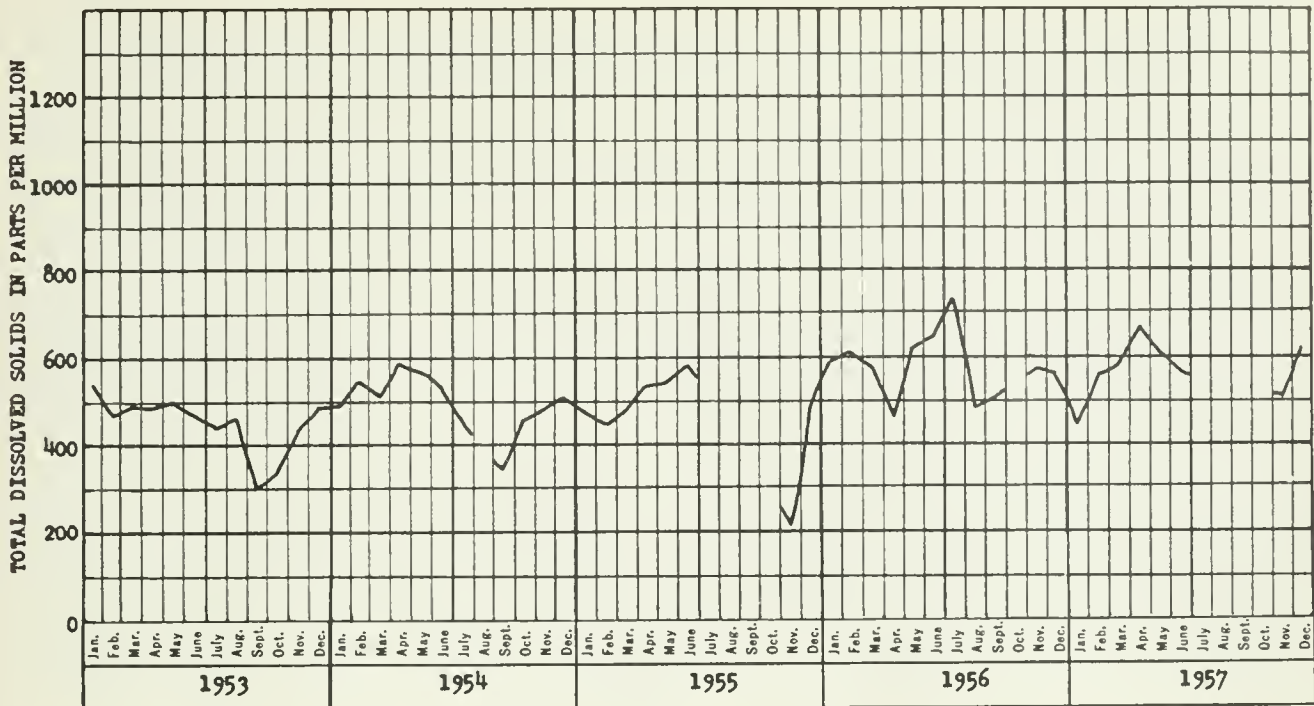
QUALITY CHARACTERISTICS  
OF  
NEW RIVER AT WESTMORLAND  
(STATION 58)



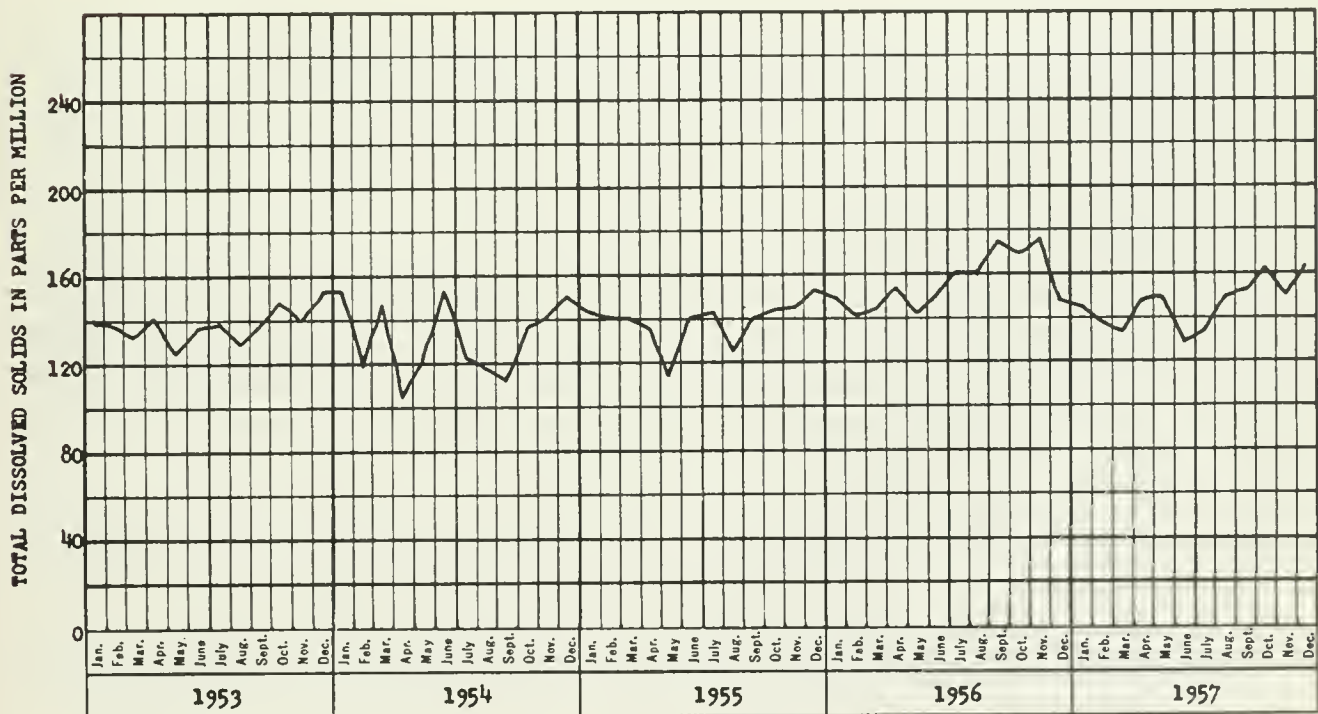
QUALITY CHARACTERISTICS  
OF  
WHITewater RIVER AT WHITewater  
(STATION 68)





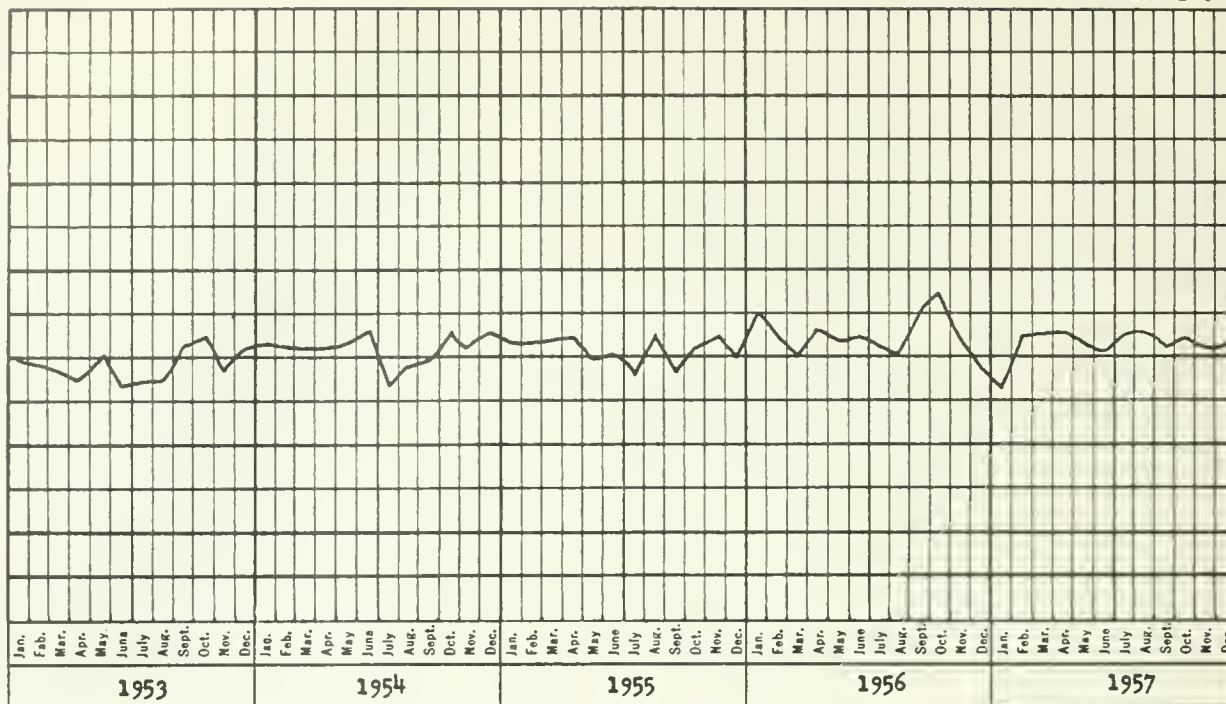


QUALITY CHARACTERISTICS  
OF  
CHINO CREEK NEAR CHINO  
(STATION 86)



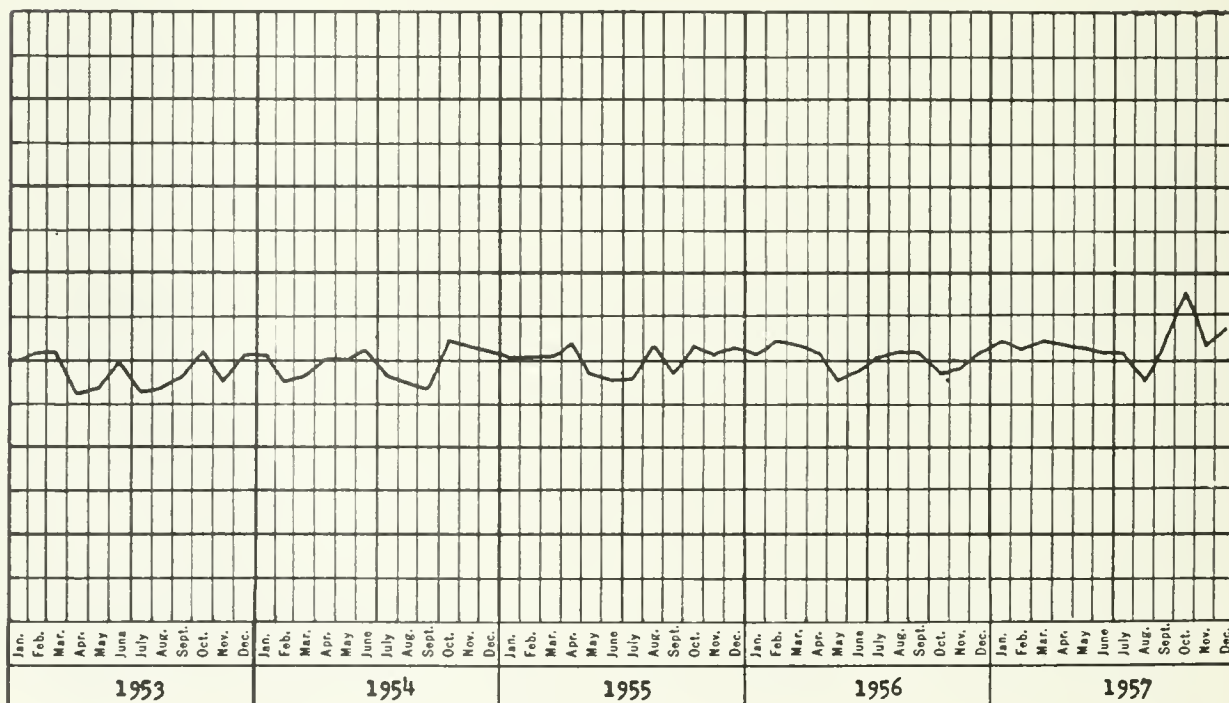
QUALITY CHARACTERISTICS  
OF  
SANTA ANA RIVER NEAR MENTONE  
(STATION 51B)

TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION

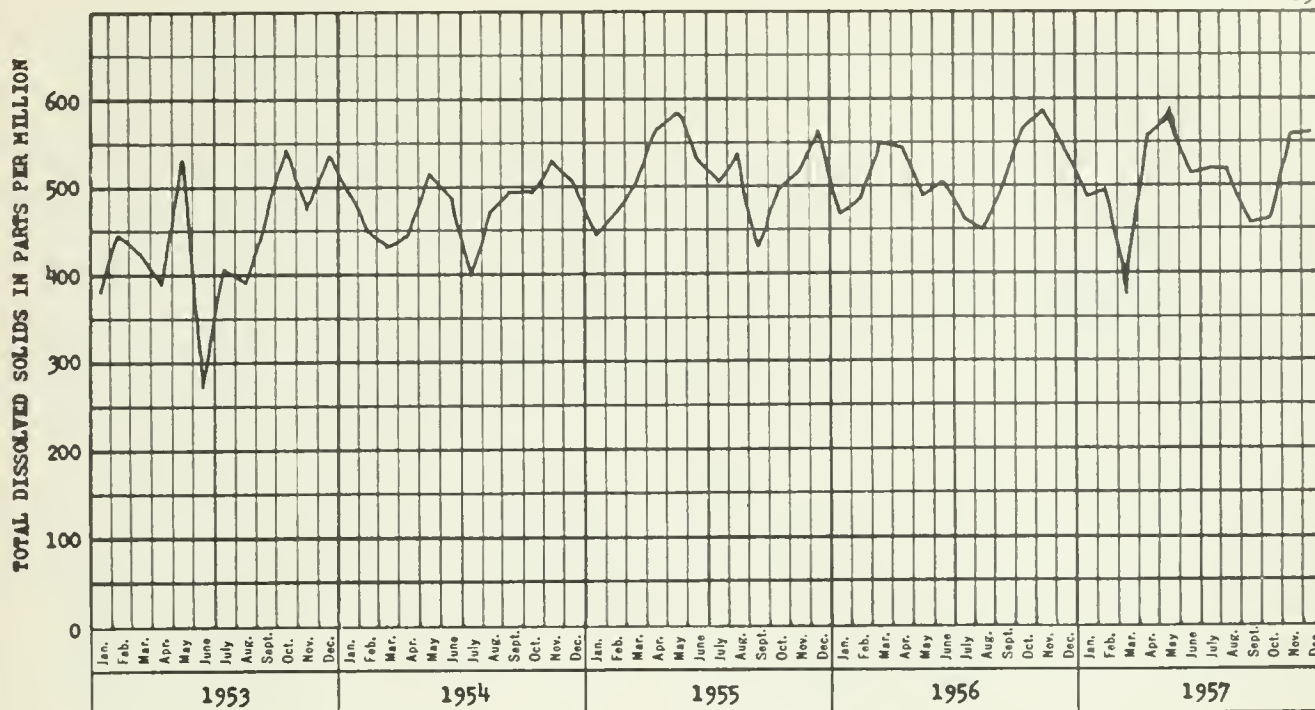


QUALITY CHARACTERISTICS  
OF  
SANTA ANA RIVER NEAR PRADO DAM  
(STATION 51A)

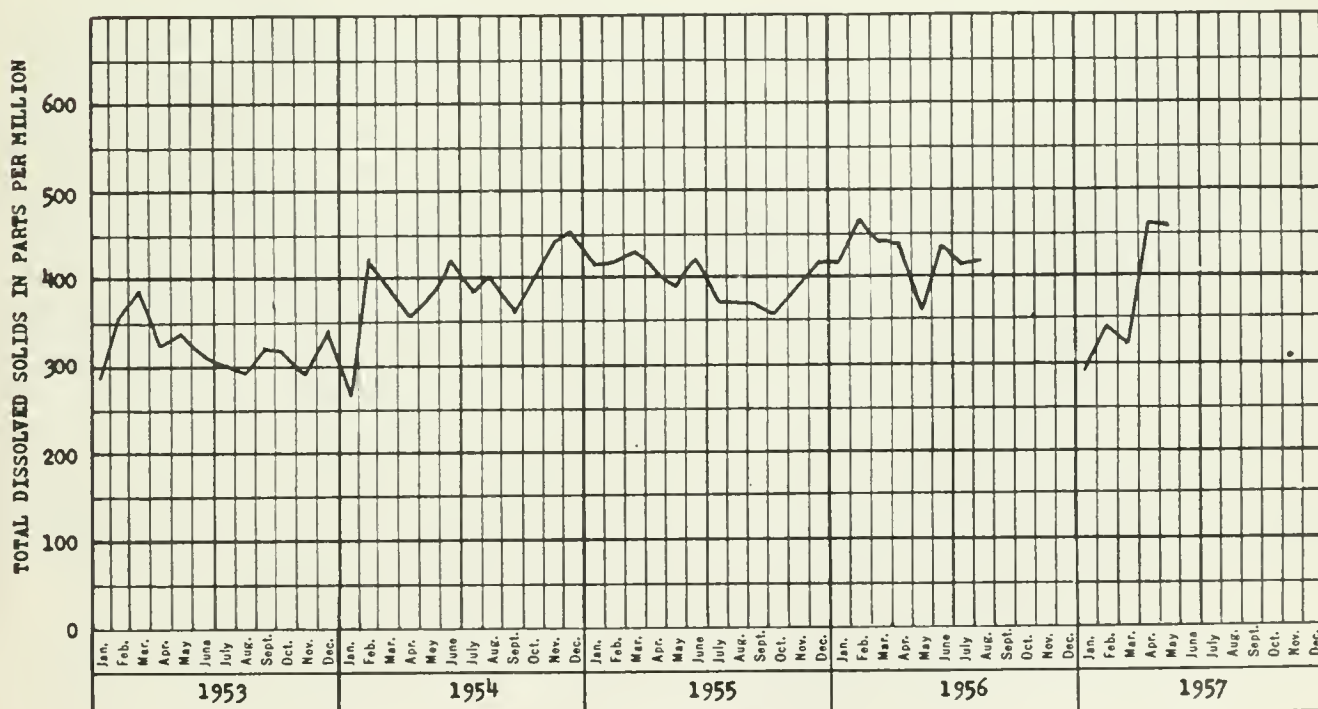
TOTAL DISSOLVED SOLIDS IN PARTS PER MILLION



QUALITY CHARACTERISTICS  
OF  
SANTA ANA RIVER AT RIVERSIDE  
(STATION 51D)



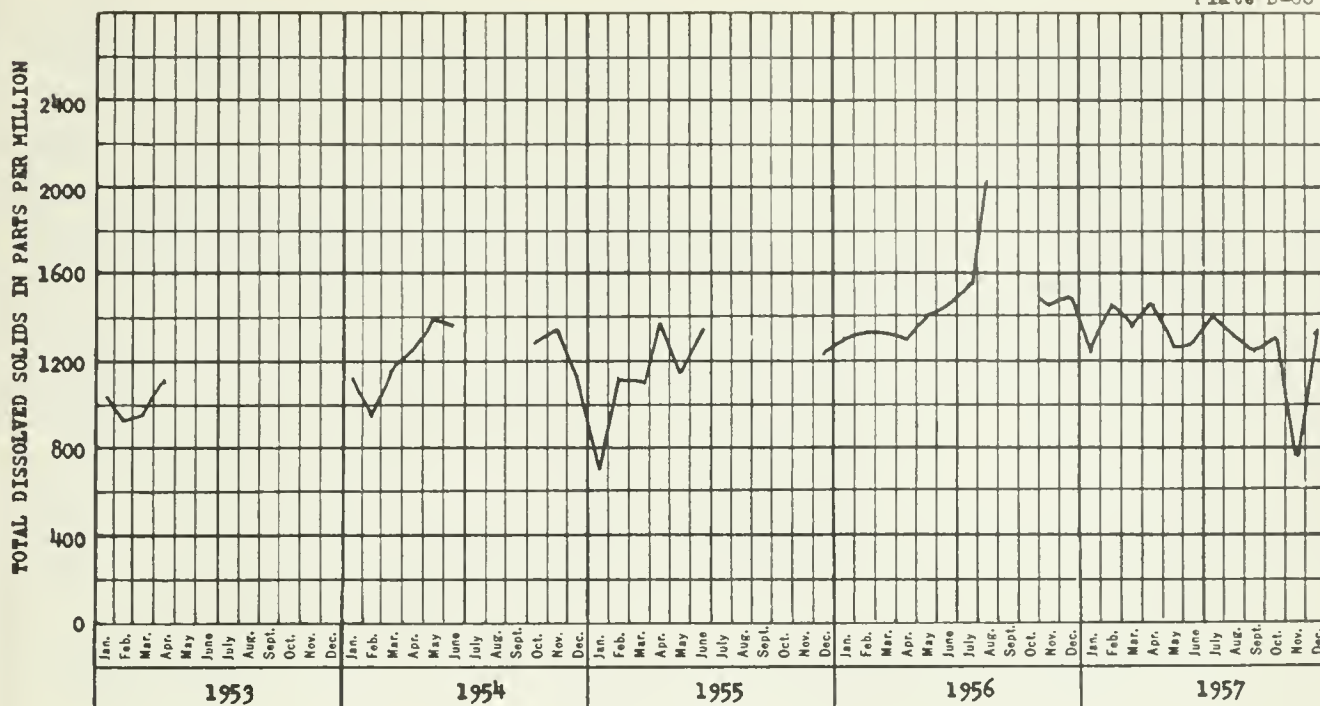
QUALITY CHARACTERISTICS  
OF  
WARM CREEK AT COLTON  
(STATION 50B)



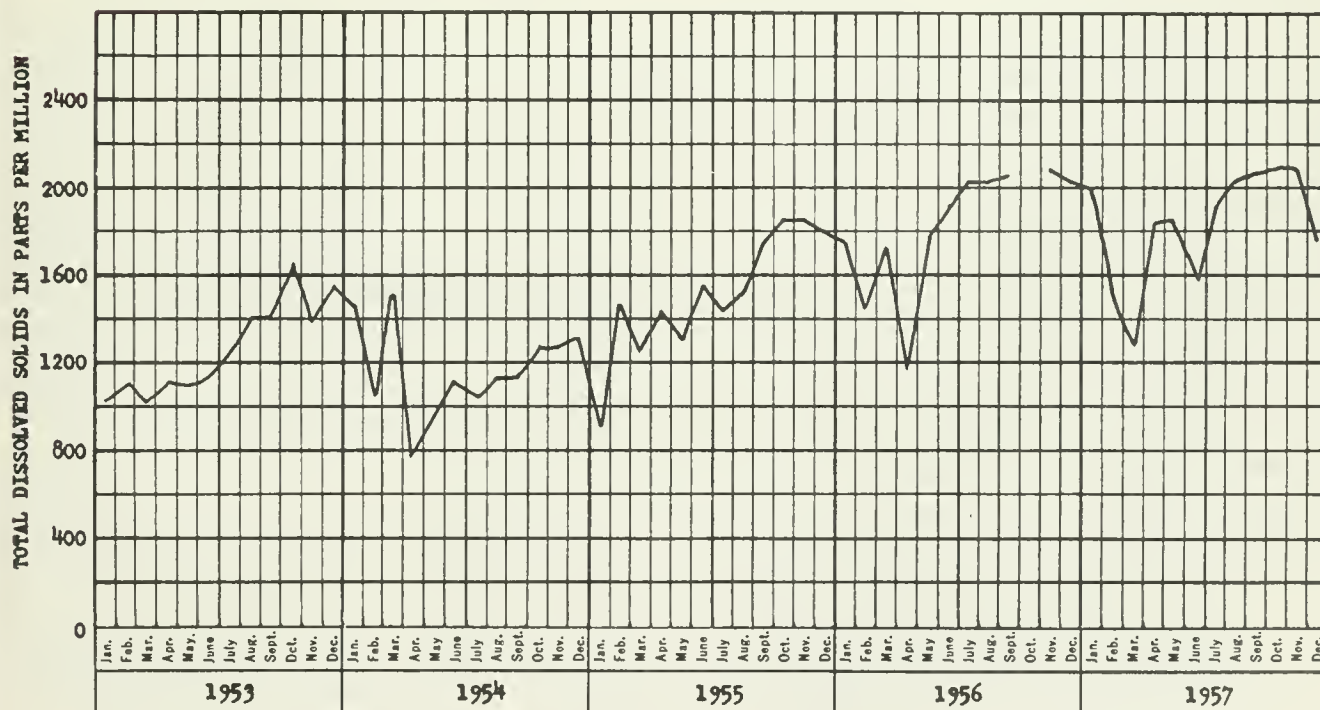
QUALITY CHARACTERISTICS  
OF  
WARM CREEK AT SAN BERNARDINO  
(STATION 50C)



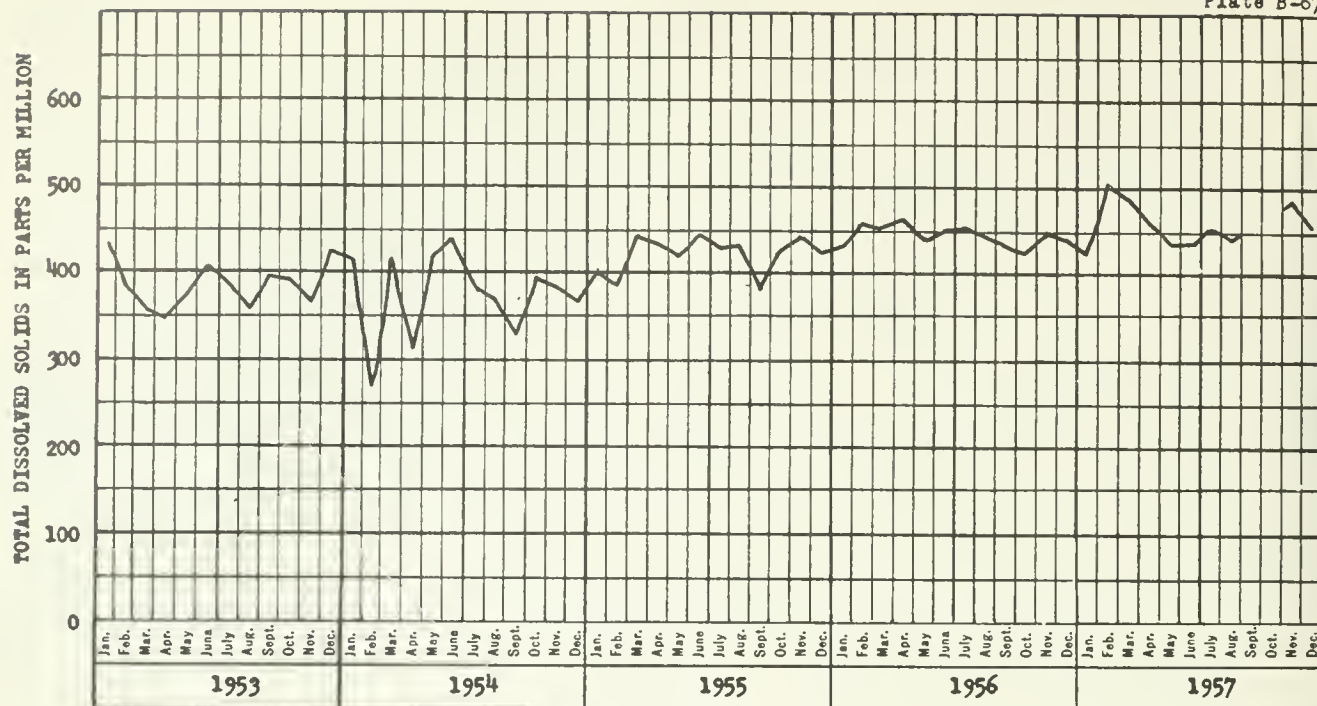




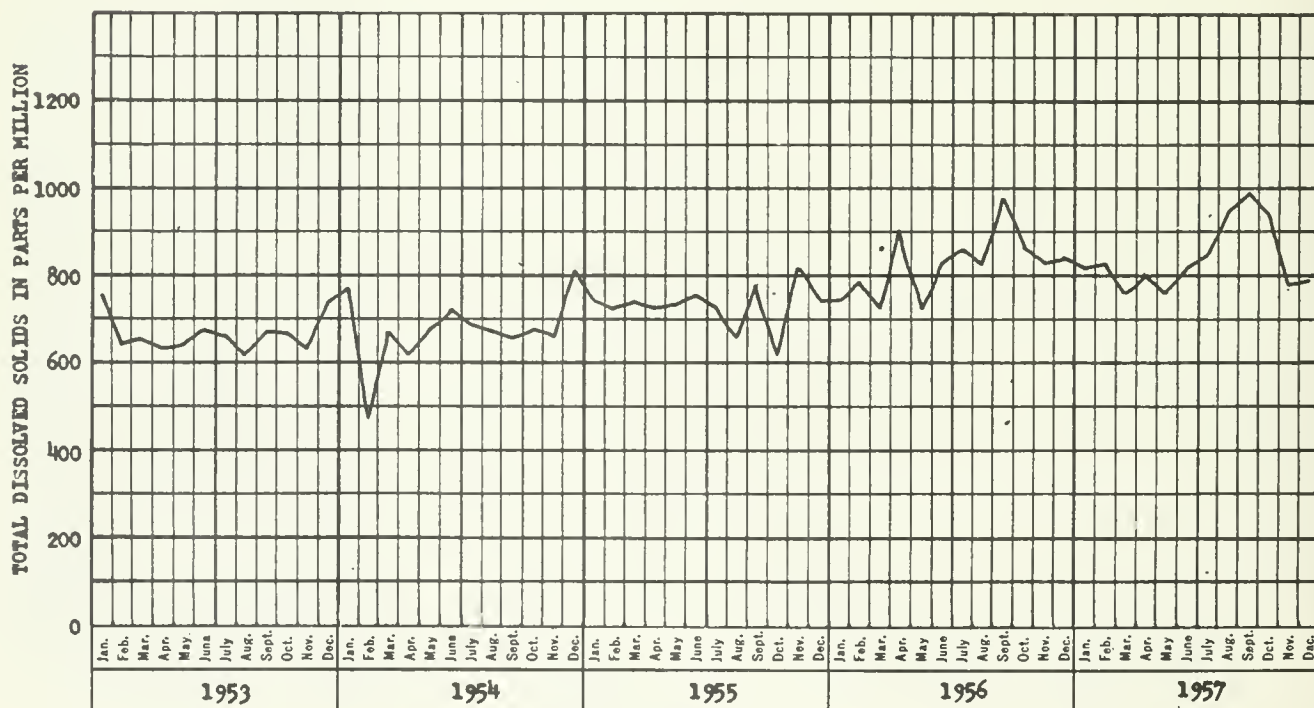
QUALITY CHARACTERISTICS  
OF  
ESCONDIDO CREEK NEAR HARMONY GROVE  
(STATION 63)



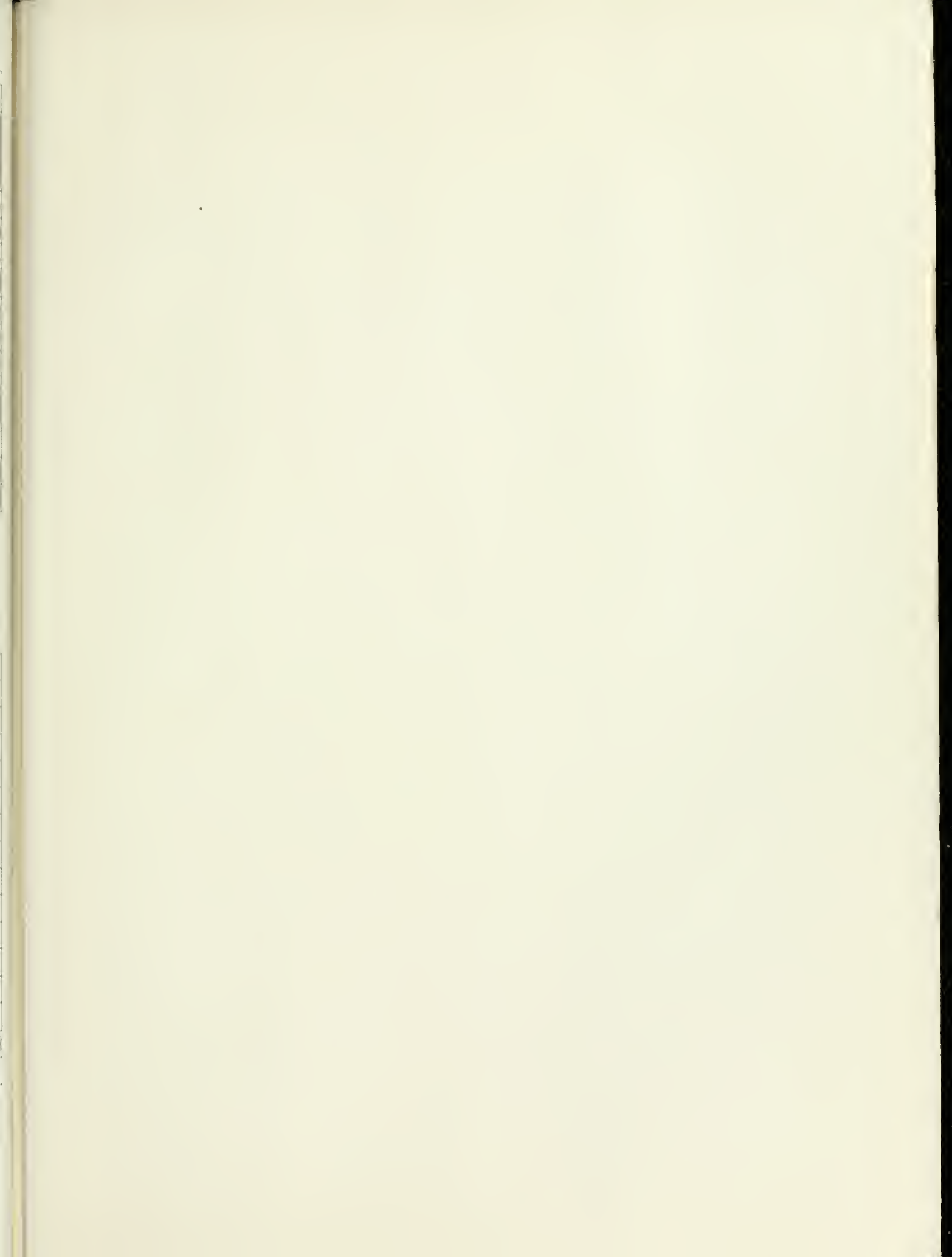
QUALITY CHARACTERISTICS  
OF  
SAN DIEGO RIVER AT OLD MISSION DAM  
(STATION 65)



QUALITY CHARACTERISTICS  
OF  
SAN LUIS REY RIVER NEAR PALA  
(STATION 62)

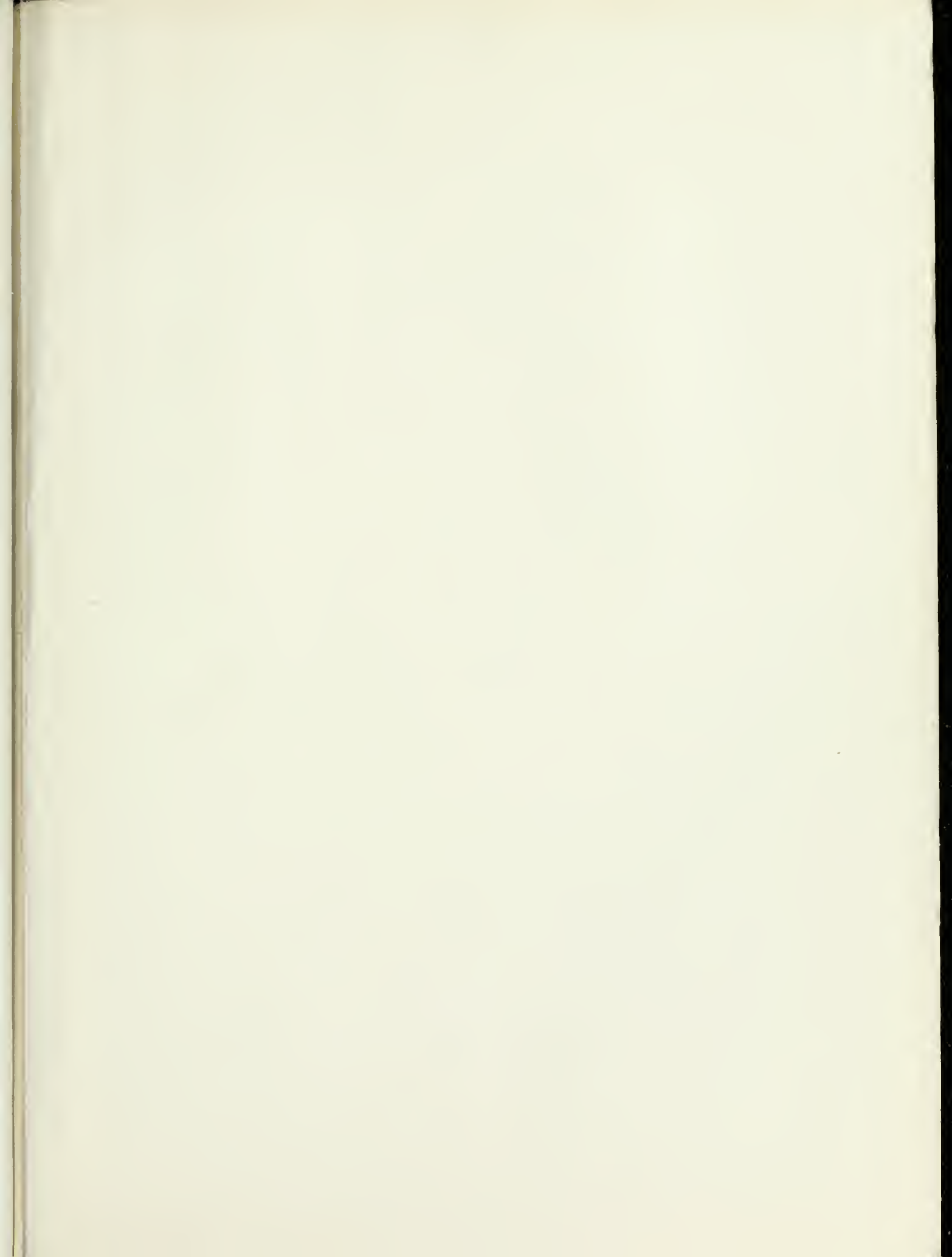


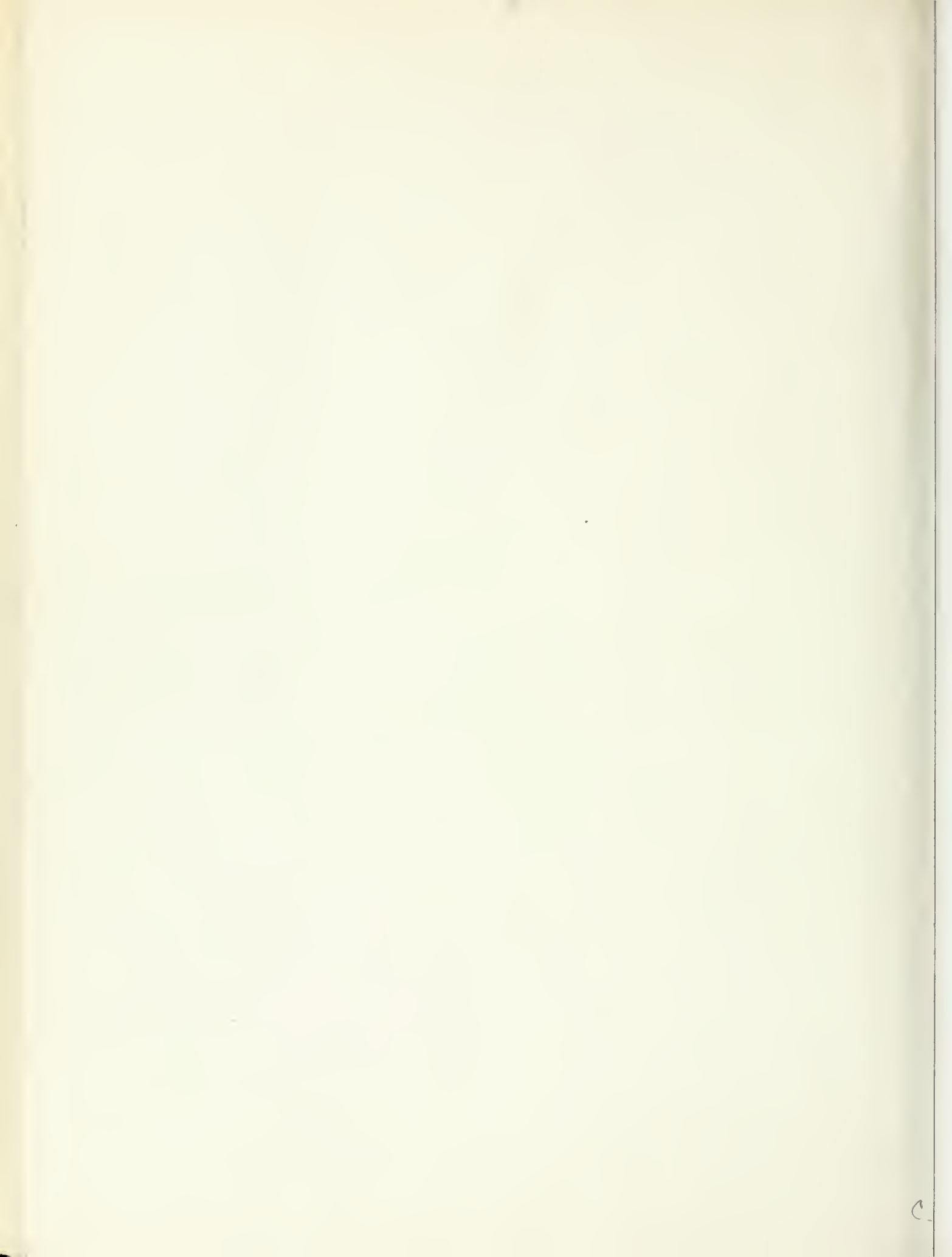
QUALITY CHARACTERISTICS  
OF  
SANTA MARGARITA RIVER NEAR FALLBROOK  
(STATION 510)





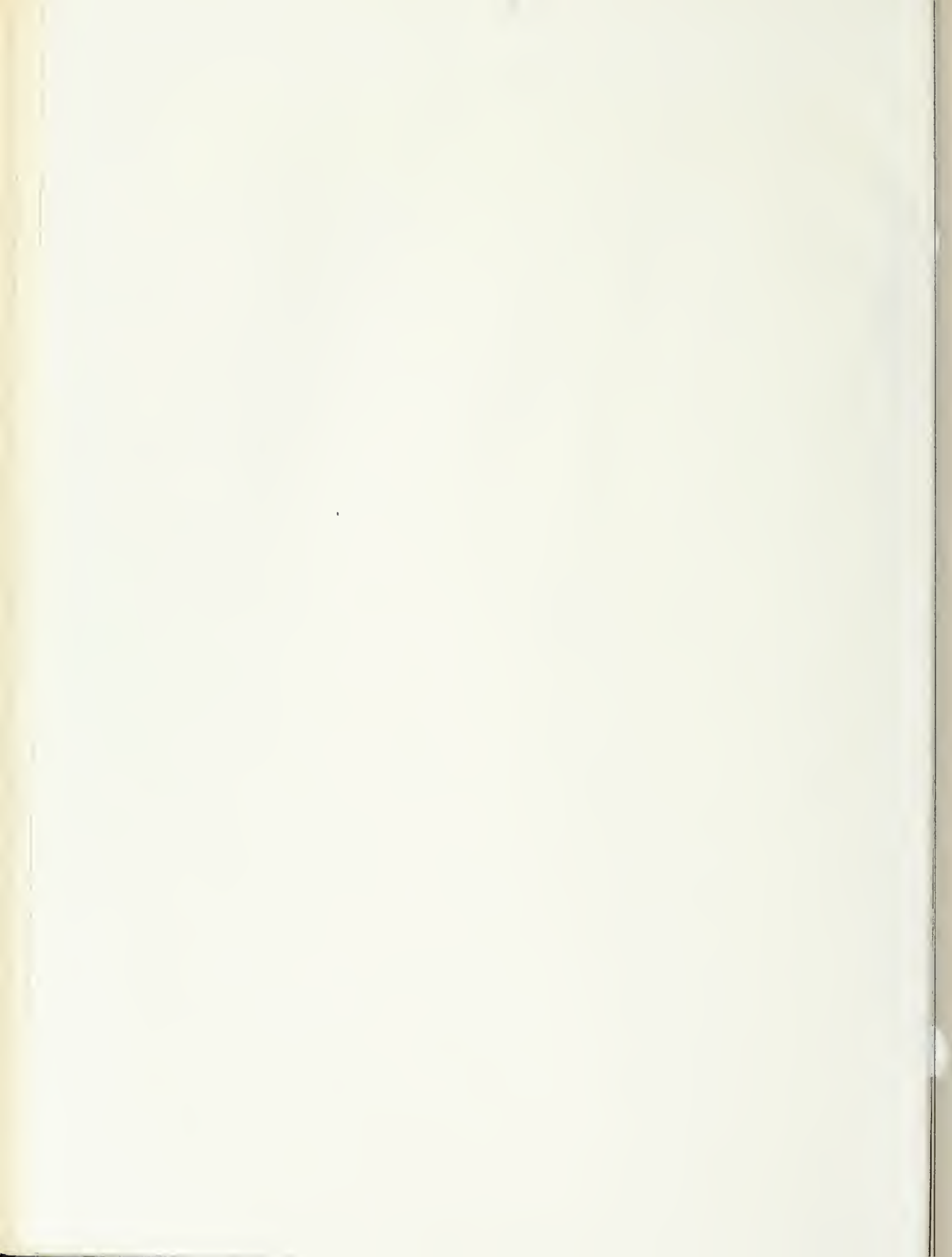














THIS BOOK IS DUE ON THE LAST DATE  
STAMPED BELOW

RENEWED BOOKS ARE SUBJECT TO IMMEDIATE  
RECALL

DEC 16 1967  
DEC 6 REC'D

LIBRARY, UNIVERSITY OF CALIFORNIA, DAVIS

Book Slip-20m-8,'61 (C1623s4)458

240491

California. Dept. of  
water resources.  
Bulletin.

Call Number:

TC824

C2

A2

no. 65:57

UNIVERSITY OF CALIFORNIA DAVIS



3 1175 02037 6490

PHYSICAL  
SCIENCES  
LIBRARY

LIBRARY  
UNIVERSITY OF CALIFORNIA  
DAVIS

240491



